76th Annual Scientific Sessions
Sri Lanka Veterinary Association

Programme and Abstracts

2nd August 2024
The Grand Kandyan Hotel
Kandy
Sri Lanka

SRI LANKA VETERINARY ASSOCIATION
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ANNUAL SCIENTIFIC SESSIONS
SRI LANKA VETERINARY ASSOCIATION

2nd August 2024
The Grand Kandyan Hotel, Kandy

Programme

8.30 a.m. – 9.00 a.m.	Registration
9.00 a.m. – 9.15 a.m.	Arrival of the Guests and Ceremonial Procession
9.15 a.m. – 9.30 a.m.	National Anthem and Lighting of the Traditional Oil Lamp
9.30 a.m. – 9.40 a.m.	Welcome Address Dr. Mohamed Ijas President, Sri Lanka Veterinary Association
9.40 a.m. – 9.50 a.m.	Address by the Guest of Honour Prof. Anil Pushpakumara Dean, Faculty of Veterinary Medicine and Animal Science
9.50 a.m. – 10.05 a.m.	Address by Platinum Sponsor Dr. Susil Silva, Head of Regional Animal Utilization SA & SSA US Soybean Export Council "The competitive edge of US Soybean meals"
10.05 a.m. – 10.20 a.m.	Address by the Chief Guest Prof. Terrance Madhujith Vice-Chancellor, University of Peradeniya
10.20 a.m. – 10.25 a.m.	Vote of Thanks Dr. Desika Jayasinghe, Secretary, Sri Lanka Veterinary Association
10.25 a.m. – 10.45 a.m.	**MORNING TEA**
10.45 a.m. – 10.50 a.m.	Opening Remarks for Scientific Sessions Prof. Indunil Pathirana, Chairman, Scientific Committee 2024
10.50 a.m. – 11.15 a.m.	Keynote Speech Dr. Viskam Wijewardana Head of the Animal Production and Health Laboratory Joint FAO/IAEA Centre, Vienna, Austria
11.15 a.m. – 11.30 a.m.	Plenary Speech Prof. Jenny-Ann Toribio Sydney School of Veterinary Science The University of Sydney, Australia

Parallel Technical Sessions: Morning (11.30 a.m. to 1.00 p.m.)

11.30 a.m. – 1.00 p.m.	Clinical – I (**Venue: Royal Peacock Ball Room**) Animal Health – (**Venue: Conference Hall, 4th Floor**) Wildlife and Aquatic Veterinary Medicine (**Venue: Mini-conference Hall, 4th Floor**)
12.00 noon – 1.00 p.m.	Mini Oral – I **(Venue: Royal Peacock Ballroom, Area II)** Mini Oral – II (**Venue: Blitz, 5th Floor)**
1.00 p.m. – 1.45 p.m.	**LUNCH**

Parallel Technical Sessions: Afternoon (1.45 p.m. to 3.45 p.m.)

1.45 p.m. – 3.45 p.m.	Clinical- II/Vetetinary Educational Research (**Venue: Royal Peacock Ball Room)** Animal Production (**Venue: Conference Hall, 4th Floor)** Public Health **(Venue: Mini-conference Hall, 4th Floor)**
2.30 p.m. – 3.30 p.m.	Mini Oral – I **(Venue: Royal Peacock Ball Room, Area II)** Mini Oral – II **(Venue: Blitz, 5th Floor)**
3.45 p.m. – 3.55 p.m.	Appreciations for the Scientific Committee, Chairs and Judges of Scientific Sessions 2024
3.55 p.m. – 4.00 p.m.	Vote of Thanks Dr. Eranga De Seram Secretary, Scientific Committee 2024
4.00 p.m.	**AFTERNOON TEA**

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Message from the President, Sri Lanka Veterinary Association

Dr. Mohamed Ijas
President
Sri Lanka Veterinary Association

It gives me immense pleasure to write a short message and welcome you all for the 76th Scientific Sessions of the Sri Lanka Veterinary Association. With the untiring efforts of the Scientific Committee and the executive committee, we are here to witness the most important annual event of the Sri Lanka Veterinary Association. At the outset I want to thank the entire Scientific Committee and Chair for the outstanding work done throughout this endeavour to make this knowledge sharing platform at high standards.

I wish to share some thoughts on emerging concept of "One welfare." In the vast span of scientific discovery and investigation, nature repeatedly acts as a central theme of spectacle and analysis. Researchers, with their immersed understanding of the natural world, have disclosed understandings that encourage us to reflect on our relationship with the environment. I wish to highlight one of the most thoughtful observations made by renowned Zoologist and Primatologist Dr. (Ms.) Jane Goodall. She pointed out that "We are not apart from nature; we are a part of nature." This trivial yet convincing assertion recaps us of our position within the environment, encouraging us to acknowledge our role in looking after the environment. Dr. Goodall's research with chimpanzees highlights the connections between humans and other species, while recognizing the critical role of the environment in ensuring wellbeing of all species.

Having recognized the interconnection between humans, animals and environment, the concept of "One Welfare" has been well recognized in the veterinary field globally, yet we Sri Lankans have not fully embraced the "One Welfare" concept that recognize the interconnections between Animal Welfare, Human Wellbeing, and the Environment. Thus, the Sri Lanka Veterinary Association deems that this novel concept of "One Welfare" should be encouraged at the Universities not by Veterinary Schools but all other faculties.
As a professional association we must represent the opportunities the profession has given us and provide the same to the others to make that impact and growth. It is not just for the young people but seniors in our profession. We must also have the appetite to learn to maintain the standards of the profession. We must learn, unlearn, and re-learn so that we can meet the challenging world we live in today. So, embrace a learning mindset to be prepared for the future demands of the profession, be aware of emerging and emerged areas, like "One Health" and "One Welfare."

Recognizing the importance of re-learning, the Sri Lanka Veterinary Association selected the theme "One Welfare through Knowledge Sharing and Collaboration" to disseminate knowledge on emerging areas such as "One Health" and "One Welfare." The Sri Lanka Veterinary Association is always there to help and guide its members and ensure that the members have knowledge and skills that meet the demands of a modern but challenging economic environment and ensure that veterinarians are fit for the future. So dear members please do actively engage in our scientific presentations to equip you with novel ideas and build networks with researchers to collaborate with them to get out of silos and embrace the notion that we are inter-dependent but independent. Further explore the vast knowledge that are available in a digital platform where you can learn, unlearn, and re-learn to be a versatile professional.

Message from the Chairman of the Scientific Committee 2024, Sri Lanka Veterinary Association

Prof. Indunil Pathirana
Chairman
76th Scientific Sessions of the SLVA

It is with great pleasure that I pen this message as the Chairman of the Scientific Sessions 2024. This year's scientific sessions run under the theme "One welfare through shared knowledge and collaboration", addressing the current needs in the animal health and production sector, both locally and internationally.

The Committee received the highest number of research abstracts received by the scientific sessions in recent years which reflects a positive trend towards research and scientific communication by veterinarians. After an effective plagiarism check and a thorough review process, 78 abstracts have been selected for presentation, adding a significant scientific value for today's scientific sessions.

On behalf of the Scientific Committee 2024, I would like to take this opportunity to announce the introduction of few new additions to the SLVA Scientific Sessions, which we firmly believe, would add glamour and value to the event. Considering the importance of disseminating novel trends and developments and understanding the current drawbacks in veterinary education that needs to be addressed, a new session dedicated to present research related to veterinary education was introduced.

It is a widely known fact that a proportion of the scientific studies ended up as poster presentations when a greater of number of studies need to be presented within a limited time period. Facilitating a greater number of research studies to be disseminated to the scientific community through oral mode, the conventional poster presentations have been replaced with four mini-oral sessions running parallel to the oral sessions. We are grateful for the Executive Committee of the SLVA for coming up with a new award to recognize excellence in mini-oral sessions in addition to the current award given away for poster presentations.

The Scientific Sessions 2024 would not have been a reality if not for the dedication and commitment of the dynamic and energetic organizing committee, with their long hours of work and late-night meetings, despite their routine busy schedules. We sincerely acknowledge the generous and professional contribution of the reviewers in providing excellent reviews for the research abstracts and the great support and understanding of the current President and the Executive Committee of the Sri Lanka Veterinary Association as well as the immediate past President of the SLVA and the Chairman of the Scientific Committee 2023.

We believe the Scientific Sessions 2024 would create a platform for productive and insightful scientific discussions among the veterinary community in Sri Lanka.

One Welfare: A holistic and comprehensive approach to animal, human and environmental well-being

Prof. Terrance Madhujith
Vice-Chancellor
University of Peradeniya

One Welfare is an integrative concept that recognizes the interconnectedness of animal welfare, human well-being, and environmental health. Emanating from the One Health framework, which focuses on the linkages between human, animal, and environmental health, One Welfare expands this perspective by emphasizing the symbiotic relationships between these domains. This approach aims to foster a comprehensive understanding that improvements in one area can lead to positive outcomes in others.

Animals play crucial roles in humankind as food, labor, and companions. Therefore, the welfare of animals can directly impact human well-being. Livestock that is well-cared for produces better quality products, enhancing food security and safety. Additionally, the psychological benefits of companion animals, such as reduced stress and improved mental health, highlight the profound connections between animal welfare and human happiness.

The haphazard use of antimicrobials on farm animals leads to the development of antimicrobial resistance compromising their therapeutic use in both humans and animals while posing threats to food safety due to residues in animal products such as milk and meat.

Human activities significantly affect the environment. Sustainable practices, such as responsible farming and forestry, can mitigate environmental degradation and promote biodiversity. This, in turn, ensures the availability of natural resources and ecosystem services essential for human survival and well-being. For example, clean water and air, fertile soil, and a stable climate are crucial for human health and livelihoods.

A healthy environment is essential for the well-being of humans as well as for wild and domestic animals. Pollution, habitat destruction, and climate change can lead to the decline of animal populations and the disruption of ecosystems. Conversely, protecting natural habitats and ecosystems supports the survival and health of diverse animal species. This balance is pivotal for maintaining biodiversity and the overall health of the planet.

Implementing One Welfare principles in agriculture involves adopting practices that enhance animal welfare, promote sustainable farming, and improve the livelihoods of farmers. Techniques such as integrated pest management, rotational grazing, and agroforestry can help achieve these goals. These practices not only improve the welfare of livestock but also contribute to environmental conservation and increased agricultural productivity. Many of the issues relating to the overuse and haphazard use of pesticides in Sri Lanka can be minimized

by adopting integrated pest management. Conservation efforts that consider the welfare of local communities, wildlife, and ecosystems are more likely to be successful. Community-based conservation projects that involve local populations in wildlife protection can enhance human well-being through eco-tourism and sustainable use of natural resources, while also safeguarding biodiversity.

Integrating One Welfare in public health initiatives ensures that human and animal health are addressed concurrently. Moreover, addressing zoonotic diseases through collaborative approaches can prevent outbreaks and protect both human and animal populations. Many emerging and reemerging zoonoses threaten human and animal well-being.

The one welfare concept presents a transformative approach to addressing the complex and interrelated challenges facing our world today. By recognizing and acting upon the connections between animal welfare, human well-being, and environmental health, we can create more sustainable and resilient societies.

Message from the Guest of Honor

Prof. Anil Pushpakumara
Dean
Faculty of Veterinary Medicine and Animal Science
University of Peradeniya

I am delighted to send this message for the 76th Annual Scientific Session of Sri Lanka Veterinary Association (SLVA), where we gather under the theme of "One Welfare." This emerging concept emphasizes the interconnectedness between animal welfare, human well-being, and environmental health, highlighting our collective responsibility as veterinary professionals. Introducing this topic at the SLVA scientific session aims to raise awareness among veterinary professionals and recognize the beneficial outcomes that can be achieved by embracing and integrating the One Welfare concept into future initiatives.

The outcomes of One Welfare are profound and far-reaching. Embracing this holistic approach enhances animal welfare through comprehensive care that considers physical, psychological, and social well-being. Simultaneously, we safeguard human health by addressing zoonotic diseases, promoting food safety, and advancing medical research benefiting both humans and animals. Furthermore, One Welfare encourages sustainable practices that preserve ecosystems and mitigate environmental degradation, ensuring a balanced and resilient planet for future generations.

During this conference, we have the opportunity to engage with research from our fellow veterinarians, share innovative ideas, and build partnerships that advance our profession. Let's harness our collective expertise to develop pioneering solutions, introduce new concepts, and drive compassionate initiatives within our communities and beyond.

I extend my deepest appreciation to the organizers, speakers, sponsors, and attendees for their unwavering commitment to advancing veterinary science and promoting the health and welfare of all living beings. Your dedication symbolizes the spirit of One Welfare, guiding us toward a future where health, welfare, and harmony thrive for all.

Wishing you a productive and enlightening scientific session.

Message from the Director General, Department of Animal Production & Health

Dr. (Mrs) K. A. C. H. A. Kothalawala
Director General
Department of Animal Production & Health

It is a great honor to deliver this message on this distinguished occasion of the 76th Annual Scientific Sessions of the Sri Lanka Veterinary Association. The chosen theme for this year's sessions, "One Welfare & One Health," is both timely and significant. This emerging concept embraces a broader perspective that encompasses national, global, and holistic viewpoints.

The "One Welfare & One Health" theme addresses not only animal welfare but also human welfare, social welfare, mental health and environmental conservation. As the Department of Animal Production and Health (DAPH), we actively collaborate with the Ministry of Health, the Department of Agriculture, and the Ministry of Environment to address the multilayered aspects of this theme. Our collective efforts are aimed at improving animal health and welfare, which in turn has a positive impact on human health and environmental sustainability.

One of the critical global issues that significantly impacts animal welfare, human health, and environmental health is antimicrobial resistance (AMR). The misuse and overuse of antimicrobials in both human and veterinary medicine have led to the emergence of resistant strains, posing a severe threat to health systems worldwide.

To address these complex challenges, international organizations such as the World Organization for Animal Health (WOAH), the Food and Agriculture Organization (FAO), the World Health Organization (WHO), and the United Nations Environment Programme (UNEP) have formed a quadripartite alliance. This collaborative effort aims to strengthen the global response to health threats through coordinated research, development, regulation setting, and clinical implementation.

As a member country of WOAH, Sri Lanka is committed to aligning our efforts with these international standards and initiatives. Our ongoing work in research and development, regulatory frameworks, and clinical practices is aimed at enhancing the health and welfare of animals, humans, and the environment.

We extend our best wishes to the Sri Lanka Veterinary Association for a successful future. Your dedication and contributions to the field of veterinary science are invaluable, and we look forward to continuing our collaborative efforts towards achieving the goals of "One Welfare & One Health."

Keynote Speech

"Innovation and networking: driving forces of one health – one welfare approach"

Dr. Viskam Wijewardana
Head, Animal Production and Health Laboratory
Joint FAO/IAEA Centre of Nuclear Techniques in Food and Agriculture, Department of Nuclear Sciences and Applications
International Atomic Energy Agency, Vienna, Austria

The concept of One Health originated from the understanding of interrelated and interdependent interactions between human, animal and environmental interphases. However, it has mostly focused on examining problems from a biased scientific perspective, primarily emphasising the health and the wellbeing of humans. One welfare was also founded on similar interactions between three spheres, but also provides the missing ethical framework for One Health thus, together the two concepts allow us to bring sustainability not only humans but also other species on earth.

Innovation and then networking for sharing the newfound knowledge is one of the key drivers of one health - one welfare concept. While innovations lie on technological, social, policy, institutional, and financial aspects, the innovations around science and technology are the key to improving health. It goes without mentioning, how the advances in scientific and technological innovations have shaped up the wellbeing of humans and welfare of animals.

Zoonotic diseases affect more than two billion people, resulting in over two million deaths every year and causing massive destruction to the eco system. Novel discoveries in disease diagnostics and surveillance technologies could help in the early and accurate detection of pathogens causing these diseases. Cancer treatment is another example where "One" approach works well for both medical and veterinary practitioners. With the extended lifetimes of both in human and companion animals due to the development of prevention and treatment methods against other infectious and metabolic diseases, cancer seems to be taking an upper hand in debilitating healthcare systems in both health industries due to overload of patients for traditional cancer treatments. Alternative treatments such as cancer immunotherapy are proving their value with immunotherapies being recognized as standard interventions against cancer. Since eighty percent of cancers are common to human and dogs, many such therapies developed against each species could be used without the use of diseases model animals being used during research and development. Moreover, several vaccines have being developed against animal or human infectious diseases adopting a common strategy. Novel livestock vaccines could improve animal welfare, save money, reduce the need for environment-damaging chemicals, and tackle alarming levels of antimicrobial resistance.

Technical elements like detection, surveillance, diagnosis and treatment have dominated much of the effort on operationalising One Health – One Welfare. This covers laboratory collaborations, facility upgrades, training and coordination between regional and international reference labs for diagnosis and quality assurance. No one organisation or institution has the capability to independently confront all the obstacles in disseminating innovations developed to address shared health concerns in animals and humans. Furthermore, it is crucial that the exchange of information via networking is reciprocal, with robust discourse among all the parties involved. Networking for capacity development sometimes results in duplicating the work of another organisation. Therefore, it is crucial to ensure that efforts are complimentary. The Veterinary Diagnostic Laboratory (VETLAB) Network is a prominent initiative by the Joint FAO/IAEA Centre of Nuclear Techniques in Food and Agriculture of the International Atomic Energy Agency. It aims to enhance the laboratory capabilities of Member States in order to promptly identify and manage transboundary animal and zoonotic diseases that pose a threat to livestock and public health. This initiative ultimately contributes to the improved welfare of animals and the enhanced wellbeing of humans.

Plenary Speech

"HPAI H5N1 - Preparing for the New Challenge"

Prof. Jenny-Ann Toribio
Associate Professor in Epidemiology
Sydney School of Veterinary Science
The University of Sydney, Australia

The Influenza A H5N1 highly pathogenic avian influenza (HPAI) virus of the clade 2.3.4.4b is now one of the most serious global threats to animal health, both wild and domestic species of birds and mammals. Important changes to the geographic distribution and the variety of affected animal species will be outlined in this presentation, along with the occurrence of illness in people. The endemic circulation of this HPAI virus among wild bird populations that now extends through Europe and the Americas indicates a paradigm shift in the epidemiology of HPAI.

This HPAI H5N1 virus presents a new and greater challenge than previously to health and food security in Australia and Sri Lanka. This presentation will consider preparedness in both countries and call for action to review and revise specific aspects of preparedness as well as our understanding of the current status in each country. There is an urgent need to strengthen public-private partnerships in recognition of shared responsibility for biosecurity, and for disease containment and control to ensure continuity of food supply. Existing plans are no longer fit for purpose. Revision of the following three preparedness activities and bold initiatives are required in order to determine the most beneficial actions to put in place now to prevent and control this disease.

Risk Assessment – prioritisation of entry pathways to identify target areas for wild bird surveillance and to particularly heighten on-farm biosecurity; and to determine importation and custom regulations in order to PREVENT INTRODUCTION TO POULTRY.

Passive Surveillance – awareness raising among the public, preparatory communication to farmers and industry, and upskilling of veterinarians and para-veterinarians on reporting and response in order to DETECT OUTBREAKS VERY EARLY IN WILD BIRDS & IN POULTRY.

HPAI Emergency Response – to decide the actions that will be implemented when an outbreak occurs in wild birds and/or in poultry, and to decide ahead how government, industry and community will collaborate in order to ensure IMMEDIATE ACTION TO CONTROL THE DISEASE.

Technical Sessions: 76th Annual Scientific Sessions of SLVA

Wildlife and Aquatic Veterinary Medicine Session - 1C (11.30 am – 1.00 pm)		
Session Chair – Dr. Erandi Pathirana		Page No.
11:30	The occurrence of capture myopathy in captive ungulates in Sri Lanka *G.I.S. Perera*, D. D. Dassanayake, D.K. Sonnadara, K.M.P. Perera, R.C. Rajapaksa, G.A.T. Prasad, S.K.S. Rathnasiri, W.M.S.K. Wijekoon, S.M.T.S. Manchanayake and M.A.R. Priyantha*	16
11:42	Serologic identification of *Treponema pallidum* (syphilis) antibody among Sri Lankan toque macaques and leaf monkeys *N. Pushpakumara*, K. Mallawa and N. Jayasekara*	17
11:54	Morphological characterization of *Amblyomma* spp. isolated from a land monitor: A case report *S.A.K.S. Fernando and N.M.T. Anupama**	18
12:06	First report of Dermocystidiosis in Koi carps (*Cyprinus carpio* var. koi) from a hobbyist tank from Kurunegala, Sri Lanka; A case report *K. L. N. Ananda, S. S. K. Liyanage, R. A. U. Kaushalya, S. A.S. Indunika, A.W. Kalupahana, K.K. Wijesundera, T. A. Gunawardana, N. M. T. Anupama and S. S. S. De S. Jagoda**	19
12:18	Comparing the prevalence of parasitic infestations in freshwater ornamental fish samples received in 2022/2023 with 1999/2000 at the Veterinary Investigation Center, Welisara, Sri Lanka *N.D.T. Sirisena*, C.M.S. Pathirana and D.A.H.Y. Senarath*	20
12:30	Surgical correction of ruptured medial collateral ligament and joint capsule of an ostrich (*Struthio camelus*) *G. M. Vidura*, J. J. Wesly, H. M. H. J. De Silva, R. M. A. N. Senevirathne and K. Nizanantha*	21
12:42	Bacterial pododermatitis in privately owned captive elephants (*Elephas maximus*) in Sri Lanka *U. H. S. Lakmal *, N.M. Aberathne, T. M. S. K. Piyadasa, A.S. Dilshan, A. Dangolla*	22

Mini Oral Session - 1 (Morning) 2A (12.00 noon – 12.55 pm)		
Session Chair – Dr. Niranjala de Silva Co-chair – Dr. Chandika Wickramasinghe		Page No.
12:00	Current status of diagnosing cardiac diseases in Sri Lanka *S. Hapuarachchi*, R. Hettiarachchi and S. Wanniarachchi*	23
12:05	An unusual presentation of cube-shaped urinary stones in a 15-year-old dog: A case report *D.A.H.Y. Senarath*, K.P.I.R. Kahatapitiya, M.M.K.S. Senarathne, H.E.M.K. Bandaranayake, K.W.D.M.Y.W. Wickramasinghe and K.M.G.W.C.P.B. Abeyrathne*	24
12:10	Clinical presentation, diagnosis, treatment and treatment outcome of salivary mucoceles in dogs: a case series *K.P.I.R. Kahatapitiya*, K.W.D.M.Y.W. Wickramasinghe and H. Ariyarathna*	25
12:15	Successful surgical management of a splenic rupture in a stray dog following a RTA: A case report *W.M.D. Ashinika*, A.M.H. Shashikala, M.N. Buddhika and B.Y. Amarasinghe*	26
12:20	Successful correction of right and left humeral fractures of Blue Indian ring-necked parrot by retrograde intramedullary pin placement and splint application. *K.H.A.T.D. Peiris**	27
12:25	Clinical presentation and diagnosis of three multilobular bone tumors in dogs *K.A.R.K. Perera*, S. Kabilan, H.E.M.K. Bandaranayake, N.M. Aberathne and H. Ariyarathna*	28
12:30	Two phenobarbitone responsive canine sialadenosis cases *K.P.I.R. Kahatapitiya*, M.R.M.C.P. Abeyrathna, T.D.M.C. Wickramasinghe and H. Ariyarathna*	29
12:35	Canine Babesiosis in Gatambe Government Veterinary Hospital, Peradeniya, Sri Lanka *D.M.Y. Sathsarani, G.V.T. Ananda, A. W. Kalupahana*, P. Kumara, D.M.M.B. Dissanayake and D.K. Silva*	30
12:40	Successful rabbit ovariohysterectomy surgical and anesthetic procedure *K.H.A.T.D. Peiris* and D. M. Siriwardane*	31
12:45	Overview of Lumpy skin disease outbreaks in Badalkumbura Veterinary Range, Monaragala District, Sri Lanka *R.A.D.S. Ranathunga*, D.A. K. Prabasara, P.C. Ubhayasiri, N.P. Kaluarachchi and D.M. Siriwardana*	32
12:50	Bovine schistosomus reflexus as a cause for dystocia; A case report *K.A.L. Piyum*, G.M. Vidura, E.M.E.G.S.H. Eakanayake, J.W.Y. Senevirathna and K. Nizanantha*	33

Mini Oral Session - 2 (Morning) 2B (12.00 pm – 12.45 pm)		
Session Chair – Dr. Madura Munasinghe Co-chair – Prof. Kavindra Wijesundera		Page No.
12:00	Isolation and identification of *Vibrio parahaemolyticus* in mud crabs (*Scylla serrata*): A case report *P. C. Ubhayasiri*, N.P. Kaluarachchi, K.M.S.M.K. Senavirathne and K.H.D.T Kasagala*	34
12:05	The impact of different polyphenol-rich sugarcane extract concentrations in drinking water on broiler growth performance, meat quality and mucosal lesions in the small intestine *R. Senaarachchi, U. D. Jayasekara, P. Weththasinghe, B. C. Jayawardana, H. E. L. De Seram, K. Nizanantha, P. G. A. Pushpakumara, M. Flavel and N. D. Karunaratne**	35
12:10	Socio-economic factors influencing family poultry production in Ampara District, Sri Lanka *A. M. Jiffry*, M. A. Nadheer and A. H. M. Hafeel*	36
12:15	Assessment of methane emission levels of dairy farming in Sri Lanka *M.I.G. Jayathilaka**	37
12:20	Impact of management practices on milk production efficiency in a selected group of dairy farms in Sri Lanka *A. Lenagala* and A. Samarasundara*	38
12:25	Evaluation of hygienic status of the poultry processing plants and further processing plants in Sri Lanka and future challenges for exportation *E. Gunasekara*, L.M.P. Wijemanne, D. Kumarasingha, J.K.H. Ubeyratne, M.A.R. Priyantha, P.I.P. Perera and M.D.N. Jayaweera*	39
12:30	Establishment of a multiplex PCR to detect *E. coli* O157:H7 *N.W.H.C.R. Nanayakkara, A.B.S. Pabasara, S.A.J.N. Subhasinghe, W.M.D.H. Suranimala, N.D. Wimalarathna, K.S.A. Kottawatta, R.S. Kalupahana and T.K. Karunarathna**	40
12:35	Analysis of epidemiological data from 2015 to 2022 to evaluate the effectiveness of rabies elimination strategies adopted to reduce human rabies deaths in Sri Lanka *P.C. Ubhayasiri*, N.P. Kaluarachchi and K.M.S.M.K. Senavirathne*	41
12:40	Phenotypic and genotypic antibiotic resistance of *E. coli* from poultry feed from medium-scale poultry farms in Sri Lanka *C.H.D. Kanishka, C.H.D. Dhanushka, D. L. Ranathunga, R.A.I.M. Ranasinghe, K.W.G.S.M. Kularathne, M.W.C.D. Palliyeguru*, and G.A. Gunawardana*	42

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14:24	Predicting the incidence of subclinical mastitis in dairy cows using machine learning techniques *D. Herath, C.K. Walgampaya, K.M. Devindi, R.M.C. Deshapriya and R.M.S.B.K. Ranasinghe**	50
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15:10	Phase 2 (field trial) of the development of an irradiated vaccine seed for bovine *Babesia bigemina* infection in Sri Lanka *S.S. Iddamaldeniya*, Iromy Amarasiri, N.D.S. Dissanayake, Hemanthi Atapattu, M. Aathiq, K.H. Kodikara, W. Sugandi, N.M.T. Anupama, K. Nizanantha, W.M.C. Dhananjaya, K.Thananjayan, Viraj Perera, M. Thusithran, J.J. Wesley, J.W.Y. Senevirathne and R.P.V.J. Rajapakse*	70
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Clinical case studies of malocclusion in incisors and molar teeth in rabbits and squirrels

Sobisan Nivethika and Chandika Wickramasinghe*

Crown Pet Hospital, Colombo 07, Sri Lanka

*Corresponding author: *chandikahiroshan@gmail.com*

This study presents five clinical cases of dental malocclusions in rabbits and squirrels, highlighting the need of timely diagnosis, tailored therapeutic interventions, and sustained dental management to ensure optimal animal welfare. Dental malocclusion in small mammals can arise from various etiologies, including trauma, congenital factors, and age-related changes. Treatment options involve regular trimming or, in severe cases, permanent tooth removal, albeit with associated risks due to prolonged anesthesia. Post-operative care entails analgesia administration for 3-7 days, confinement indoors for 7-10 days to prevent wire-related injuries, and modification of dietary intake to include more roughage and calcium-rich foods while limiting pellets and soft fruits. Case one was an 11-year-old rabbit, Mugi, presented with malocclusion attributed to prior trauma. Treatment encompassed mandible cheek teeth spike reduction, extraction of mobile teeth, and regular incisor trimming under isoflurane gas anesthesia for the past seven years, supplemented with meloxicam for pain management and a supportive diet. Case two Chuki, a 3-year-old squirrel, was suffering from overgrown incisors following a fall, managed with analgesics, enrofloxacin, and regular dental trimming. Case three Kiri, was a 1-year-old rabbit exhibiting reduced appetite due to overgrown lower molars impacting the upper palate, managed through regular molar trimming, pain relief, and dietary modifications. Case four was Pancha, a 2-year-old rabbit with overgrown incisors and peg teeth, undergoing trimming every 4-5 months under isoflurane anesthesia. Case five, Bunny was a 5-year-old rabbit experiencing oral bleeding, necessitating mandible molar trimming and extraction under isoflurane anesthesia, with subsequent improvement in appetite and clinical condition. All cases demonstrated significant improvement post-treatment, with restored appetite and clinical normalcy observed the day following intervention. Regular dental trimming every 4-5 months was essential to prevent recurrence of overgrowth, except for Bunny, where extraction was required due to tooth mobility. These cases underscore the crucial role of veterinary intervention in addressing dental malocclusions. Timely diagnosis, personalized therapeutic strategies, and consistent dental care are paramount in alleviating discomfort and ensuring the well-being of these small mammals. Furthermore, owner education plays a crucial component in recognizing and mitigating dental issues in companion animals.

Keywords: Dental malocclusion, rabbits, squirrels, veterinary intervention, dental management

Eosinophilic granuloma in a pony: A case report

K.A.L. Piyum[1*], G.M. Vidura[1], E.M.E.G.S.H. Eakanayake[1], J.W.Y Senevirathna[1], H.M.H.S. Ariyarathna[2] and K. Nizanantha[1]

[1]*Veterinary Teaching Hospital, Department of Farm Animal Production and Health, Faculty of Veterinary Medicine and Animal Science, University of Peradeniya*
[2]*Department of Veterinary Clinical Sciences, Faculty of Veterinary Medicine and Animal Science, University of Peradeniya, Sri Lanka*

Corresponding author: lakshitha.piyum@gmail.com*

Nodular lesions are common in equids and such cutaneous masses and swellings are commonly found in distal aspect of limbs. Most of those nodular lesions are due to conditions such as eosinophilic granuloma (nodular necrobiosis), sarcoid and melanoma. In Sri Lanka, mostly eosinophilic granuloma which could be either focal or multifocal is misdiagnosed as exuberant granuloma. Parasitism and hypersensitivity are mainly associated with eosinophilic granuloma in horses. A fifteen-years-old, two-weeks post partem lactating pony with rapidly growing 10cm mass in the meta tarsal region of the left hind limb was presented to the Large Animal Teaching Hospital, University of Peradeniya. At the time of presentation, the mare was emaciated and anemic. The differentials for the mass lesions were equine sarcoid, eosinophilic granuloma and neoplasia. For confirmatory diagnosis tissue biopsies were submitted for histopathology. Histopathology was consistent with eosinophilic granuloma. Briefly, there was collagen degeneration with multifocal regions of dystrophic mineralization in the deep dermis with degranulating and degenerative eosinophils. Superficial and deep perivascular dermatitis with marked eosinophilia and infiltration of macrophages, lymphocytes and plasma cells were also noted. No fungal hyphae or fragments of parasitic worms were observed in the necrotic centres. Even though surgical debridement is the main treatment option for this condition, fixation of eosinophilic granuloma with formalin was deployed due to poor physical condition of the animal. The lesion was bandaged with wet swabs of formalin to reduce the aggressive growth. Parental antibiotic treatment with benzylpenicillin and supportive treatment with multivitamin were given and a good prognosis was established within a two-month period. Eosinophilic granuloma among horses must be diagnosed with proper histopathological investigation. The condition can be well managed ensuring good prognosis through above method in horses when the surgical manipulation is risky.

Keywords: Eosinophilic granuloma, equids, fixation

Uveodermatological syndrome in a 3-year-old Labrador retriever

M.M.K.S. Senarathne*, H. Ariyarathna, H.E.M.K. Bandaranayake, D.A.H.Y. Senarath and K.M.G.W.C.P.B. Abeyratne

Department of Veterinary Clinical Sciences, Faculty of Veterinary Medicine and Animal Science, University of Peradeniya, Peradeniya, Sri Lanka

*Corresponding author: *kavindhya23341@vet.pdn.ac.lk*

Uveodermatological Syndrome (UDS) is a rare immune-mediated hereditary disorder of dogs that affects eyes and pigmented skin. It is mostly reported in Akitas, Samoyeds, chow chows, Siberian husky and Alaskan malamute. UDS is rarely reported in Labrador retrievers. This case report describes clinical findings, diagnostics, treatments and outcome of a 3-year-old female Labrador retriever presented with clinical signs and lesions consistent with UDS. The dog was presented for chronic intermittent vomiting and vision impairment. Vision impairment was previously treated with eye drops containing antibacterials and latanoprost without any success. In the physical examination the dog was bright, alert and responsive and all vital parameters were within the normal limits. The routine vaccinations of the dog were up to date, and it had been recently dewormed. There was severe, multi focal skin depigmentation, especially on and around the nasal planum, lips and peri-ocular areas. This was confirmed by comparing the colour of the aforesaid regions of the skin in old photographs of the dog provided by the owner. Moderate erythema, and multi focal alopecia with depigmentation were also observed over the dorsum and flank. In addition to dermatological lesions, severe blepharospasm, conjunctival hyperemia, severe diffuse corneal edema, severe mucopurulent discharges suggesting keratitis were identified in ophthalmic examination. The menace response was intact bilaterally, and pupillary light reflex was difficult to determine in both eyes due to severe corneal oedema. Deep and superficial skin scrapings and Wood's lamp examination were negative and skin impression smears revealed a small number of bacterial cocci. Except moderate number of *Babesia gibsoni* organisms in stained blood smears, CBC, serum creatinine, blood urea nitrogen and urinalysis were unremarkable. Considering the ocular and dermatological manifestations together, the dog was tentatively diagnosed with UDS and immunosuppressive treatments were initiated. Before commencing immunosuppressive therapy, the dog was treated with clindamycin (11mg/kg) for Babesiosis. Immunosuppressive treatments included prednisolone (1.1mg/kg) and azathioprine (1.5mg/kg). Supportive treatments included omega-3-fatty acids (1000mg/animal) and acetylcysteine (10mg/kg). Gradual improvement of ocular and dermatological lesions was observed with treatments and ocular signs were almost completely resolved in one eye after 2-months of immunosuppressive therapy.

Keywords: UDS, immune-mediated, Labrador retriever, vision impairment, depigmentation, immunosuppressive therapy

Feline hyperaesthesia syndrome: A case report on clinical findings and treatment

S.U. Samarasinghe*, B.M.M.W. Manchanayake and B.I.U. Perera

Vets and Pets Animal Hospital, Palawatte, Sri Lanka

*Corresponding author: *umeshass95@gmail.com*

Feline hyperaesthesia syndrome (FHS), also known as twitchy cat syndrome, is a poorly understood disorder affecting cats, particularly young ones aged 1-5 years. Breeds like Siamese, Burmese, Abyssinian, and Persian are predisposed. Symptoms include twitching skin on the lower back, dilated pupils, aggressive behavior, excessive meowing, discomfort when touched, tiredness, and in severe cases, seizures, drooling, and leg paddling. Causes can be dermatological, neurological, or behavioral, making diagnosis challenging. Treatment often involves behavioral modification and psychoactive medications (e.g., gabapentin, topiramate), tricyclic antidepressants (e.g. Topiramate, amitriptyline), or selective serotonin uptake inhibitors (e.g., fluoxetine). A 9-month-old, fully vaccinated, female Persian cat was presented with excessive tail grooming, aggression, and excessive meowing. Clinical examination revealed a temperature of 103.4°F, likely due to stress, with no other abnormalities. The cat exhibited aggressive behavior during the exam and blood collection. Hematology and skin tests showed no significant findings, and no external parasites or physical trauma were observed. The cat had no environmental stress factors. After giving deworming treatment, the cat experienced drooling, impulsive jumping, and running episodes, culminating in a seizure managed with a single dose of midazolam (0.2mg/kg). Hospitalized for monitoring, the cat had two more seizures the next day, triggered by loud barking and a routine exam, both controlled with midazolam. Neurological exams and hematology/biochemistry analysis showed no abnormalities. Oral gabapentin (10mg/kg every 12 hours) was commenced, resulting in calm and comfortable behavior with no further seizures. Cat was discharged with gabapentin for two more weeks. During the follow up visit after one week treatment, cat was found to be comfortable. Gabapentin was prescribed for another week and tapered off. Client was advised to increase the interaction with the cat and to use gabapentin prior to visit the vet. Gabapentin is also used for chronic pain, seizures and anxiety in cats, especially before stressful events like vet visits. Definitive diagnosis of FHS requires comprehensive assessment and diagnostics.

Keywords: Feline hyperaesthesia syndrome, seizures, gabapentin

Clinical application and outcome of skin flaps (subdermal and axial) and skin grafts to repair extensive cutaneous defects in dogs and cats

D.M. Siriwardane*

Pet Vet Clinic, 151, Kirula Road, Colombo 05, Sri Lanka

*Corresponding author: *dayanimilna@yahoo.com*

Flaps (subdermal and axial) and grafts are used to repair large cutaneous defects. Subdermal plexus are random flaps that detach from surrounding skin that stretched or rotated to fill the defects. Survival relies on collateral circulation from the remaining cutaneous attachment and its vasculature. Axial pattern flaps are larger flaps which can be rotated up to 180 degrees at its base, which incorporates direct cutaneous artery and vein. Skin graft is a segment of epidermis and dermis that is completely removed from the body, and transferred to a recipient site which survives on re-establishment of vascular supply engraftment. Objective of this study was to investigate the success of skin flaps and free skin grafts for closure of large skin defects following trauma or extensive surgical resection. Seven dogs and 11 cats were included. Selection of the flap was based on wound location and the size. Diverse forms of subdermal plexus flaps were used in 11 animals (advancement, rotational, plasty, flank and elbow fold flaps). Six animals had Axial flaps (Caudal superficial epigastric, caudal auricular, thoracodorsal, deep circumflex iliac). One dog underwent free skin graft on traumatic distal fore limb. Other reconstruction techniques such as undermining, waking sutures and tension relieving sutures were also combined in the closure. The flap viability was assessed subjectively by color, temperature, capillary perfusion and the cosmetic appearance. In some cases, temporary drains were placed to prevent seroma formation. The donor site for graft was lateral abdomen. Variable layers of dressings were used in graft. Analgesia was provided with morphine/ meloxicam combination. Animals who had traumatic wounds had antibiotics based on cultures. Animals who had partial necrosis post surgically, additional cultures were used to select antibiotics. Ten animals had partial distal flap necrosis and dehiscence which was managed conservatively. Thoraco-dorsal flap completely failed in one dog which could have been due to occlusion of arterial blood supply. Skin graft survived with complete epithelialization. Seventeen animals recovered well without compromising mobility. In the reconstruction surgical procedures complications are expected. However, careful surgical planning, minimizing surgical trauma help to maximize the outcome from these challenging treatment modalities.

Keywords: Skin flaps, skin grafts, extensive cutaneous defects, dogs

Management of superficial chronic corneal epithelial defects

R.M.N.S. Nuwanshika* and R.A.D.E.I. Rajapaksha

Rover Veterinary Hospital, Battaramulla, Sri Lanka

Corresponding author*: naduninuwanshika@gmail.com*

Superficial Chronic Corneal Epithelial Defects (SCCED), commonly referred to as indolent ulcers or 'boxer' ulcers, are characterized by persistent, superficial ulcerations featuring a non-adherent epithelium and lacking stromal involvement. Diagnosis involves visual inspection for non-healing ulcers with a distinct epithelial lip, complemented by fluorescein staining to highlight irregular edges. Additional ophthalmic tests such as the Schirmer Tear Test (STT) and tonometry for intraocular pressure aid in completing the examination and ruling out underlying causes. Given limitations in accessibility to certain surgical methods like diamond burr debridement, we opted for epithelial debridement with a cotton tip and grid keratotomy. Our study, conducted at Rover Veterinary Hospital from December 2023 to March 2024, involved seven surgeries. Anesthesia was administered using midazolam (0.4mg/kg), propofol (10mg/kg), and 1.5% isoflurane gas. The eye was cleaned with a 1:50 solution of diluted povidone iodine mixed with normal saline. After applying a topical anesthetic (proparacaine eye drop), abnormal epithelium and debris were gently removed using a cotton-tipped applicator. Superficial punctures were then made into the anterior stroma to stimulate tissue regeneration. Post-operatively, topical antibiotics were administered to prevent secondary infections, and oral NSAIDs were used to reduce inflammation and discomfort. An Elizabethan collar was provided to prevent self-trauma, and follow-up appointments were scheduled every 7 to 10 days to monitor healing and perform additional debridement if necessary. Out of the seven cases, five exhibited complete healing following the first interventions. One case demonstrated recurrence but healed after a second debridement attempt. Another case showed partial improvement initially but was reported as healed recently. The affected animals ranged in age from 2 to 7 years, with the majority being crossbreeds, alongside one Pomeranian and one Rottweiler. In conclusion, our chosen interventions, particularly epithelial debridement with a cotton tip and grid keratotomy, proved effective in most cases. The importance of careful examination to eliminate underlying causes, effective surgical management, and continuous monitoring in addressing SCCEDs is necessary. Our findings highlight the importance of surgical management and continuous monitoring in effectively addressing SCCEDs, even in clinics with limited facilities.

Keywords: SCCED, indolent ulcers, epithelial debridement, grid keratotomy,

Management of Addisonian crisis in a canine patient: A case report

S.K.A.S. Fernando*, H.K.U.S. Hemachandra and G.K.M.C. Ranasinghe

Pet Vet Clinic, No.155, Bernard De Zoysa Road, Colombo 05, Sri Lanka

*Corresponding author: *achirasfernando@gmail.com*

Addison's disease or hypoadrenocorticism results from inadequate production of glucocorticoids and mineralocorticoids. Mineralocorticoid deficiency (aldosterone) leads to impaired water and electrolyte homeostasis which manifests as dehydration, pre-renal azotemia (due to hypovolemia), hypotension, hyperkalemia, hypercalcemia, hyponatremia, hypochloremia. Hyperkalemia exacerbates lethargy, and anorexia, potentially causing myocardial toxicity and arrhythmias. Glucocorticoid deficiency contributes to anorexia, vomiting, diarrhea, malena, lethargy, and weight loss and predisposes to hypoglycemia. This case report is based on a 9-year-old, intact female crossbred dog with the complaint of recumbency, anorexia, and vomiting. Upon examination, bradycardia, sinus arrhythmia, hypothermia, hypoglycemia, and dehydration were revealed. Hematology and biochemistry indicated normocytic, normochromic non-regenerative anemia, profound hyperkalemia, moderate hyponatremia (lowered Na^+/K^+ ratio), mild hypercalcemia, and azotemia with hyperphosphatemia. The pet had hypotensive readings and ECG abnormalities included peaked T-waves, shortened Q-T interval, prolonged P-R interval, and reduced P-wave amplitude. Urinalysis revealed hypersthenuria, proteinuria with the presence of granular casts. Liver profile was indicative of normal liver enzyme levels except hypoalbuminemia and hyperglobulinemia with diminished A/G ratio. A neurological examination was performed and it was unremarkable. Based on the history, clinical examination, and laboratory findings, the condition was tentatively diagnosed as Addison's disease with Addisonian crisis. Low basal cortisol level (1.68 mcg/dl) and abdominal ultrasonography (comparatively small right adrenal gland with thin caudal pole and fibrosed medulla) confirmed the diagnosis. Treatment involved correcting severe dehydration and hypovolemia, hypothermia, and hypoglycemia. Intravenous 0.9% NaCl with 50% dextrose initially, followed by 10% calcium gluconate to correct severe hyperkalemia and hypoglycemia, intravenous dexamethasone followed by oral prednisolone and fludrocortisone acetate were given. The pet responded to the treatments upon discharge with biochemical parameters that started to normalize. This case emphasizes the importance of prompt diagnosis and intensive management of hypoadrenocorticism with multimodal therapy, including fluid resuscitation, glucocorticoid, and mineralocorticoid supplementation. Canine hypoadrenocorticism is treatable with a good prognosis though it is a rare condition. In settings with limited access to sophisticated lab tests and potential medicines, in Sri Lanka, diagnosis and treatment must be conducted with the available resources.

Keywords: Canine hypoadrenocorticism, hyperkalemia, basal cortisol level

Serological evidence for the presence *Leptospira* spp. among horses in a state equine unit: A preliminary study

G. M. Vidura[1], N. S. Rathnayake[3], R. Vijeyakumaran[3], T. Herath[3], W. M. M. B. Wijekoon[4], R. Jinadasa[2], C.D. Gamage[3] and G.D.R.K. Perera[1*]

[1]*Department of Farm animal Production and Health, Faculty of Veterinary Medicine and Animal Science, University of Peradeniya*
[2]*Department of Veterinary Pathobiology, Faculty of Veterinary Medicine and Animal Science, University of Peradeniya*
[3]*Department of Microbiology, Faculty of Medicine, University of Peradeniya, Sri Lanka.*
[4]*Police Mounted Division, Department of Police, Sri Lanka.*

Corresponding author: dammikaperera183@gmail.com*

Leptospirosis is one of the most widespread zoonoses in the world, caused by the pathogenic spirochete bacteria of the genus Leptospira and a global veterinary and public health burden. This condition affects a wide range of mammals. Cattle, buffaloes, horses, sheep, goats, pigs, dogs, and rodents are some reservoir hosts present globally. Primarily associated clinical signs in horses are fever, abortion, uveitis and icterus observed in some cases. Many studies have showed that horses carry Leptospira frequently without showing significant clinical signs. Despite its global presence, no records of equine leptospirosis in Sri Lanka are available. Therefore, this study was conducted as a preliminary study aimed to determine the sero-positivity of leptospirosis among horses in Sri Lanka. A total of 28 blood samples were collected from apparently healthy horses belongs to a state equine unit in Colombo. The serum was separated and subjected to the Microscopic Agglutination Test (MAT) using a panel of 11 representative sero-groups of live Leptospira antigens. The sero-groups included were, Sejroe, Icterohaemorrhagiae, Canicola, Javanica, Shermani, Autumnalis, Panama, Grippotyphosa, Tarassovi, Bataviae, and Semaranga. A MAT titer of >1:400 is considered positive for the test. In the MAT, 04 out of 28 samples (14.3%) were positive. Among the positive samples, three were positive for serogroup Sejroe (two samples at 1:400 and one sample at 1:800), and one was positive for serogroup Canicola at 1:800 titer. Additionally, 12 samples (42.8%) showed low antibody titers (1:100–1:400) for Sejroe (n=6), Grippotyphosa (n=2), Semaranga (n=2), Autumnalis (n=1), and Javanica (n=1). The findings of this study indicate those horses, have been infected by pathogenic Leptospira species. In the absence of proper vaccination programs for equine leptospirosis in Sri Lanka, these results highlight a significant risk to animal health even though proper biosecurity measures are being managed at that unit. This study underscores the need for further investigations on equine leptospirosis in Sri Lanka. Future research should utilize blood samples to identify seropositivity and, more importantly, urine samples to determine the carrier status of horses for Leptospira spp.

Keywords: Horses, MAT, *Leptospira*

Autopsy finding of canine hepatic capillariasis reported for the first time in Sri Lanka

D.M.U.N.K. Dunuwila[1*], P.M.P. Karunanayake[1], R.M.K.K. Wijesundera[1], D.M.A.P. Dissanayake[2], A. Arulkanthan[1] and G.S.P. de S. Gunawardena[1]

[1]*Department of Veterinary Pathobiology, Faculty of Veterinary Medicine and Animal Science, University of Peradeniya, Peradeniya*
[2]*Sri Lanka Police Kennels Division, Sri Lanka*

*Corresponding author: *unkdunuwila@gmail.com*

Capillaria hepatica (syn *Calodium hepaticum*) is a zoonotic parasite with a worldwide distribution. Wild rodents are the main hosts; however, this nematode is rarely encountered in dogs and humans. Upon ingestion of infective eggs by the susceptible animals, the parasite develops into adults in the liver parenchyma where they lay eggs. The presence of worms and eggs could provoke focal necrosis, inflammation and fibrosis in the liver. Hepatic capillariasis is usually diagnosed by means of histopathological examination. This study describes the autopsy finding of *C. hepatica* infection in a dog for the first time in Sri Lanka. Carcass of a four-year-old, male, German Shepherd, working dog with a history of chronic renal failure was received by the Department of Veterinary Pathobiology, University of Peradeniya, in November, 2018 for a detailed necropsy. In addition to lesions related to renal failure such as renal fibrosis and chronic inflammation, the necropsy revealed enlarged liver with multifocal pale areas on the surface of the right liver lobe. Specimens from the liver were fixed in 10% neutral buffered formalin, processed for histopathology by routine methods and stained with hematoxylin and eosin (H&E), periodic acid Schiff (PAS) and Masson's Trichrome. Histopathological examination revealed parasitic granulomas in the hepatic parenchyma with numerous eggs surrounded by macrophages and lymphocytes. The eggs (20.15 ±1.99 µm (17.54-25.55) x 9.63 ± 0.87 µm (7.79-11.29)) were barrel shaped with bipolar plugs and the egg shell had two layers. Although no adult worms were observed, the parasite was identified as *C. hepatica* based on the morphology of eggs. As this parasite has been previously reported in Sri Lanka from wildlife, such as bandicoot and jungle cat, the dog in this case may have got the infection by habituating in wildlife infested areas. Although there were no documented cases of human capillariasis in Sri Lanka, occurrence of this parasite in a sentinel host like domestic dog indicates that there might be a risk of acquiring this parasitic infection for human who are living in the areas inhabited by wildlife.

Keywords: Canine, *Capillaria hepatica*, Sri Lanka, zoonotic, nematode

Clinical significance of *Theileria* sp. Yokoyama infection in cattle examined in Polonnaruwa and Kurunagela districts, Sri Lanka

P.G.I.D. Amarasiri[1*], K. Nizanantha[2], N.M.M. Ngigi[3], I.S. Kothalawala[4], K.S. Madusanka[5], H. Kothalawala[1], T. Sivakumar[3] and N. Yokoyama[3]

[1]*Veterinary Research Institute, Peradeniya*
[2]*Department of Farm Animal Production and Health, Faculty of Veterinary Medicine and Animal Science, University of Peradeniya*
[3]*National Research Center for Protozoan Diseases, Obihiro University of Agriculture and Veterinary Medicine, Obihiro, Hokkaido, Japan*
[4]*Department of Biochemistry, Faculty of Medicine, University of Peradeniya, Sri Lanka*
[5]*National Livestock Development Board, Colombo, Sri Lanka*

*Corresponding author: *idamarasiri@gmail.com*

Bovine theileriosis is a serious disease caused by *Theileria parva*, *T. annulata*, and *T. orientalis* in cattle. However, a recent study in Sri Lanka discovered a novel *Theileria* species, designated as *Theileria* sp. Yokoyama, in cattle. This study aimed to evaluate the clinical significance and potential risk factors associated with the *Theileria* sp. Yokoyama infection. We collected blood samples from 206 cattle in seven Veterinary Ranges in Sri Lanka, including Medirigiriya, Polonnaruwa, Hingurakgoda, Welikanda, Bakamoona, and Aralaganwila of Polonnaruwa district, and Melsiripura of Kurunagela district. These samples were used for analyzing red blood cell (RBC) indices, including haemoglobin concentration (Hb), haematocrit (HCT), and RBC count, and for extracting DNAs. Subsequently, we screened the blood DNA samples with a newly developed *Theileria* sp. Yokoyama-specific PCR assay using a set of forward (5'-ACTTTCTTTTATGTTCCAACAAAAGGTGAA-3') and reverse (5'-CAATTGATAACACAACACAAGTTCCAACGA-3') primers that targets cytochrome b gene. We found that 60 (29.1%) of the surveyed cattle were positive for *Theileria* sp. Yokoyama infection. The infection rates were higher ($P<0.05$) in *Bos taurus* (50.0%) and cross-bred cattle (35.2%) than *Bos indicus* cattle (16.6%), in cattle managed under extensive systems (63.4%) as opposed to intensive (0.0%) or semi-intensive system (1.1%), and in cattle with tick infestations (40.2%) in contrast to those without (9.5%). Further screening with other pathogens-specific PCR assays detected *T. orientalis* (47.6%), *Babesia bovis* (3.9%), *B. bigemina* (6.8%), and *Anaplasma marginale* (62.1%) in the cattle. Notably, 47 (78.3%) of the *Theileria* sp. Yokoyama-infected cattle were co-infected with the aforementioned pathogens. We observed significant reductions ($P<0.05$) in the mean values of at least one RBC index in the cattle infected with *Theileria* sp. Yokoyama, whether it was a single or a co-infection, in comparison to non-infected cattle. Additionally, we evaluated the anaemia status among the surveyed cattle. An animal was considered as anaemic if Hb, HCT, and RBC counts simultaneously fell below 8 g/dL, 24%, and 5 x 10^6 µL, respectively. By this criterion, anaemic cases were detected in the cattle infected with *Theileria* sp. Yokoyama (both single infection and co-infection), but not in uninfected animals. In conclusion, our findings suggest that *Theileria* sp. Yokoyama is associated with clinical anaemia in the infected cattle.

Keywords: Bovine theileriosis, *Theileria* sp. Yokoyama, risk factors, anaemia

Bioinformatic analysis of host's cell transformation-related genes in *Theileria* sp. Yokoyama

W. P. P. S. I. Perera[1,3*], N.M.M. Ngigi[1], P. G. I. D. Amarasiri[2], K. Nizanantha[3], H. Kothalawala[2], T. Sivakumar[1] and N. Yokoyama[1]

[1]*National Research Center for Protozoan Diseases, Obihiro University of Agriculture and Veterinary Medicine, Obihiro, Hokkaido, Japan*
[2]*Veterinary Research Institute, Peradeniya, Sri Lanka*
[3]*Department of Farm Animal Production and Health, Faculty of Veterinary Medicine and Animal Science, University of Peradeniya, Peradeniya, Sri Lanka*

Corresponding author: paviperera.pp@gmail.com*

Theileria species can be categorized into transforming and non-transforming species. The transforming *Theileria* species can alter the infected leukocytes, leading to their indefinite proliferation. The transforming *Theileria* includes *Theileria parva*, *T. annulata*, *T. lestoquardi*, and *T. taurotragi*. During their evolution, the transforming *Theileria* species underwent significant genetic changes, characterized by acquisition or expansion of their gene families, such as SVSPs, TashHN, and TashAT genes. Consequently, these genes could potentially serve as markers for identifying whether a *Theileria* species possesses the capacity to induce host cell transformation. A recent study has described a novel bovine *Theileria* species, designated as *Theileria* sp. Yokoyama, in Sri Lanka. However, it is unclear whether the *Theileria* sp. Yokoyama possesses transforming capabilities. Therefore, the objective of this study was to assess the presence of transformation-related genes in *Theileria* sp. Yokoyama. In this study, *Theileria* sp. Yokoyama sequences homologous to *T. annulata* SVSP2, SVSP4, TashHN, and TashAT genes were identified from DNA samples that had been obtained from the infected cattle in Sri Lanka by PCR and sequencing methods. Subsequent bioinformatic analysis was done using MEGA X software, and revealed that the *Theileria* sp. Yokoyama SVSP2 and SVSP4 homologous sequences shared high identity scores (83.9-97.6% and 84.0-96.8%, respectively) with the *T. annulata* genes, and clustered together in the constructed phylogenetic trees. By contrast, the homologous sequences from *Theileria* sp. Yokoyama shared low identity scores with the *T. annulata* TashHN and TashAT genes (78.0-79.8% and 20.8-50.2%, respectively), and formed distinct clades in the phylogenetic trees. Moreover, the TashAT homologous sequences of *Theileria* sp. Yokoyama exclusively possessed a single AT-hook, while the *T. annulata* sequences had multiple AT-hooks. Despite the differences observed, the translated amino acid sequences of TashHN and TashAT from *Theileria* sp. Yokoyama contained both signal peptides and nuclear localization signals, similar to the *T. annulata* TashHN, and TashAT. These signals are also observed in SVSP2 and SVSP4 of *T. annulata*, and known to contribute to their transformation-related functions. Our findings suggest that *Theileria* sp. Yokoyama has the potential to transform the infected leukocytes in cattle.

Keywords: Theileria, hemoparasites, molecular genetics, Sri Lanka

Development and evaluation of an inactivated oil adjuvant Newcastle Disease vaccine for prolonged immunity in layers

W.M.A.D. Wanninayaka*, H. Kothalawala and S. Puvanendiran

Animal Virus Laboratory, Veterinary Research Institute, Peradeniya, Sri Lanka

Corresponding author: anushika_a@yahoo.com*

An Inactivated oil adjuvant vaccine against Newcastle Disease (ND) was produced for layers to prolong their immunity. The ND seed virus (Mesogenic strain) was inoculated and propagated in ten days old Embryonated Chicken Eggs (ECE). Alantoic fluid (AF) was harvested and working seed of 4.9 log 10 EID_{50}/ml was prepared. Working Seed was inactivated and the surface antigens were fixed by formaldehyde. Inactivation was tested by three continuous passages in 10 days old ECE. The embryos were examined for pathological lesions and AF was tested for hemagglutinating activity for the presence of live ND virus. The inactivated antigen was emulsified with Montanide™ ISA 71R VG oil at 20°C. The physical properties of emulsified antigen were satisfactory. The sterility of the antigen was tested and found to be negative for any bacteria or fungi. Safety test was carried out by vaccinating normal dose (0.5ml) for 20 birds and double dose (1ml) for 10 birds intramuscularly and 10 birds were kept without vaccination as a control group. Birds were observed for three months, and no adverse reactions were developed. Efficacy testing was carried out by serology. Hemagglutination Inhibition test (HI) was carried out before vaccination and $2^{nd,}$ 4^{th}, 6^{th}, 8^{th}, 10^{th} and 12^{th} week after vaccination. The mean HI titer and the mean SD value of total unvaccinated birds throughout the experiment period was 2.58 log2$\pm$1.01. The mean HI titer and the mean SD value of total vaccinated birds with normal dose throughout the experiment period was 5.5 log 2$\pm$0.85. The mean HI titer and the mean SD value of total vaccinated birds with double dose throughout the experiment period was 7.7log2$\pm$ 0.9. The p-value was <0.05 was obtained at all the time points and it shows that the results are statistically significant. This experiment was repeated 3 times and similar results were obtained. HI titer should be $\geq$ 4 log2 for protective immunity. Hence this study showed that the inactivated oil adjuvant ND vaccine is safe and protective. The stability of the vaccine needs to be studied to determine the shelf life.

Keywords: Embryo infective doses, hemagglutination test, hemagglutination inhibition test

Pathological insights into suppurative cholangitis in goats: A case report

P.R. Danthanarayana[1], S.A.S. Indunika[3], K.G.M.S. Mendis[2], M. Ijas[2], W.R. Jayaweera[3], R.R.M.K.K. Wijesundara[3] and T.A. Gunawardana[3*]

[1]*Department of Basic Veterinary Sciences, Faculty of Veterinary Medicine and Animal Science, University of Peradeniya, Peradeniya*
[2]*Municipal Veterinary Department, Colombo*
[3]*Division of Veterinary Pathobiology, Department of Veterinary Pathobiology, Faculty of Veterinary Medicine and Animal Science, University of Peradeniya, Sri Lanka*

*Corresponding author: *thusharigunawardana@yahoo.com*

Suppurative cholangitis (neutrophilic cholangitis/destructive cholangitis) is a severe inflammatory liver disease in domestic animals that can progress to septicemia, hepatic failure, and death if untreated. This is the most common acquired inflammatory liver disease in cats and is occasionally reported in dogs. However, suppurative cholangitis is very rarely reported in goats. Generally, suppurative cholangitis occurs due to a blockage in the biliary system, parasitic infestations such as liver flukes, and subsequent ascending bacterial infections from the gut. This case report investigates the pathological findings in the livers of several goats affected by suppurative cholangitis. Multifocal, well-demarcated, white nodules (approximately 1cm in diameter) were observed in several livers of goats (n = 3) in the Colombo abattoir in April, 2024. Liver samples were fixed in 10% (v/v) neutral buffered formalin. Formalin-fixed tissues were routinely processed for histology, wax embedded, and sectioned at 3 µm at the Division of Veterinary Pathology, Department of Veterinary Pathobiology, Faculty of Veterinary Medicine and Animal Sciences, University of Peradeniya. Sections were stained with hematoxylin and eosin and observed under light microscope. Severe cholangitis with bile duct proliferation, infiltration of neutrophils and macrophages in to the Glisson's sheath, and mild to moderate thickening of the Glisson's sheath (periportal fibrosis) were observed in all tissue sections. A few sections showed abscesses in the liver parenchyma with *Splendore-Hoeppli* reactions. Most of the major bile ducts showed signs of destruction, including epithelial degeneration and necrosis. Interestingly, a cross section of a helminth parasite was observed in a destructed bile duct. The gross and histopathological findings are highly suggestive of suppurative cholangitis with an ascending bacterial infection that has resulted from GIT parasitism in these goats. Therefore, suppurative cholangitis should be considered as a differential diagnosis in hepatobiliary diseases and GIT parasitism in goats.

Keywords: Liver, suppurative cholangitis, goats, abattoir, GIT parasitism.

Occurrence of hepatic schistosomiasis in a sheep herd in Vavuniya

K. Suthaharan[1], G.I.S. Perera[2*], N.D.S. Dissanayake[2], A.C. Anuruddhika[1], W.M.S.K. Wijekoon[2], A.M.H. Athapaththu[2], M.R.M. Aathik[2] and M.A.R. Priyantha[2]

[1]*Veterinary Investigation Centre, Department of Animal Production and Health, Vavuniya*
[2]*Veterinary Research Institute, Gannoruwa, Peradeniya, Sri Lanka*

*Corresponding author: shalivet@yahoo.com

Schistosomiasis, a parasitic infection affecting many animal species, is caused by the blood fluke *Schistosoma*. In addition to causing production losses in livestock animals, some *Schistosoma* species are zoonotic. Therefore, control of the condition in animals is essential for elimination of the disease in humans. Here, we report the occurrence of schistosomiasis in a herd of local crossbred sheep in Omanthai, Vavuniya in March 2024. The farm consisting of around 100 semi-intensively managed sheep, had a previous history of heavy gastrointestinal parasitism with immature paramphistomiasis and coccidiosis, which was treated and controlled. However, several animals continuously showed signs of general debility, of which two animals (aged three years) died without apparent clinical signs. The necropsy examination disclosed ascites, marked patchy black discolouration of liver and enlarged gall bladder in both animals. Multifocal white to yellow discoloration of the lung was observed in one animal. Histopathology revealed multifocal, chronic granulomatous hepatitis with infiltration of macrophages, lymphocytes, some polymorphonuclear leukocytes and occasional multinucleated giant cells with intermittent fibrosis. The granulomatous reaction has been precipitated by schistosomal eggs which were evident in the liver sections indicating hepatic schistosomiasis. An adult worm also could be observed in a venule. While splenic tissues revealed lymphocytolysis, mild multifocal fibrinous bronchopneumonia was detected in the affected lung, likely a result of a secondary bacterial infection. However, dung samples tested were negative for schistosomal eggs. The herd was treated with praziquantel (35mg/kg, repeated after 14 days), the drug of choice for schistosomiasis with supportive therapy for debilitated animals. The farmer was advised to improve the management practices including avoiding sending animals to the grazing yard containing a pond which he used for feeding the animals. It was observed that the condition and the health status of animals improved during the follow up visits to the farm. This reveals that although the prevalence may be high, hepatic schistosomiasis in livestock animals can be easily overlooked and neglected, escaping diagnosis due to the intermittent and low shedding of eggs in faeces, which may not readily permit diagnosis of the disease. Therefore, incorporating new and/or parallel diagnostic tests to the conventional methods should be considered.

Keywords: *Schistosoma*, schistosomiasis, hepatic, praziquantel, sheep

An epidemiological survey of *Theileria equi* and *Babesia caballi* infections in horses in Sri Lanka

K. Nizanantha[1,*], H.M. K. Dhananjaya[1], B.A.L.S. Beligala[1], I. Amarasiri[2], N.M.M. Ngigi[3], H. Kothalawala[2], T. Sivakumar[3] and N. Yokoyama[3]

[1]*Department of Farm Animal Production and Health, Faculty of Veterinary Medicine and Animal Science, University of Peradeniya, Peradeniya, Sri Lanka*
[2]*Veterinary Research Institute, Peradeniya, Sri Lanka*
[3]*National Research Center for Protozoan Diseases, Obihiro University of Agriculture and Veterinary Medicine, Obihiro, Hokkaido, Japan*

*Corresponding author: *k.nizanantha86@gmail.com*

Equine piroplasmosis (EP) is a tick-borne disease caused by *Theileria equi* and Babesia caballi in *equines*. Clinically, EP is characterized by anemia caused by asexual reproduction of parasites within red blood cells. The control of EP is vital in endemic countries to reduce economic losses from production losses, cost of treatment and tick control, and impaired movement of Infected animals. A previous study detected *T. equi* in donkeys in Sri Lanka, but the status of EP in horses remains unknown. This study, therefore, sought to investigate the prevalence of *T. equi* and *B. caballi* infections in horses in Sri Lanka. We collected blood samples from 96 horses in Sri Lanka and used them for full blood counts, preparation of thin blood smears, separation of sera, and extraction of DNA. To detect the *T. equi* and *B. caballi*, we subjected the Giemsa-stained blood smears to microscopy, DNA samples to species-specific PCR assays, and serum samples to competitive enzyme-linked immunosorbent assays (cELISA). We found that all horses were negative for *T. equi* and *B. caballi* in blood smears, and for *B. caballi* in PCR and cELISA. However, *T. equi* was detected in 3 horses (3.1%) by PCR, while *T. equi*-specific antibodies were detected in 36 horses (37.5%) by cELISA. The seropositive rate of *T. equi* was significantly higher in horses managed semi-intensively (74.2%; 23/31) than those managed intensively (20.0%; 13/65). Moreover, the seropositive rate was higher in locally bred horses (72.7%; 16/22) compared to imported horses (27.0%; 20/74), possibly due to different management systems. In addition, the seropositive rate was higher in males (47.4%; 27/57) than females (23.1%; 9/39). We found that anemia, as indicated by red blood cell indices, was more prevalent in horses seropositive for *T. equi* (8/36; 22.2%) compared to non-infected horses (4/60; 6.7%). Furthermore, screening with genotype-specific PCR assays found that the three horses that had been PCR-positive for *T. equi* were infected with genotypes A and C. The detection of anemia and the presence of genotype A, which is known for its virulence, in *T. equi*-infected horses suggests that EP may have clinical importance in Sri Lanka.

Keywords: cELISA, equine piroplasmosis, horses, PCR, Sri Lanka, *Theileria equi*

The occurrence of capture myopathy in captive ungulates in Sri Lanka

G.I.S. Perera[1*], D. D. Dassanayake[2], D.K. Sonnadara[2], K.M.P. Perera[2], R.C. Rajapaksa[2], G.A.T. Prasad[3], S.K.S. Rathnasiri[4], W.M.S.K. Wijekoon[1], S.M.T.S. Manchanayake[1] and M.A.R. Priyantha[1]

[1]*Veterinary Research Institute, Gannoruwa, Peradeniya*
[2]*National Zoological Gardens, Department of National Zoological Gardens, Dehiwala*
[3]*Department of Wildlife Conservation, Battaramulla*
[4]*Veterinary Investigation Centre, Department of Animal Production and Health, Homagama, Sri Lanka*

*Corresponding author: *shalivet@yahoo.com*

Capture myopathy (CM) is a non-infectious, often fatal muscle degenerative condition that primarily affects wild animals, zoo animals, and animals in captivity. CM can arise due to stress and exertion that may occur during capture, restraint or transportation, or other causes of stress including environmental factors. Here we describe incidence of CM reported and confirmed in zoo animals during 2023-2024, in a zebra, giraffe and spotted deer. The animals have either been subjected to transportation/handling for treatment or exposed to extreme noise. Subsequently, the zebra has shown signs of ataxia, incoordination, head pressing and was hypoglycaemic. The giraffe has been recumbent and lethargic. Despite rigorous supportive therapy, both animals died: one 4 days after the incident and the other, one day after. Contrastingly, the spotted deer died shortly after the incident/exposure. During necropsy, the common lesions observed were, vascular congestion and haemorrhage in heart, lungs and intestines, and hepatic oedema. Histopathology revealed predominant diffuse skeletal muscle fibre necrosis with loss of cross striations, vacuolation and fragmentation, denoting rhabdomyolysis in all animals. Cardiomyocyte necrosis with contraction band necrosis was also prominent. Renal tubular necrosis, hepatic centrilobular necrosis, and pulmonary haemorrhage, oedema and emphysema could be further detected. Based on the history, gross pathology and histopathology, the conditions were diagnosed as CM, i.e. capture/stress induced cardiomyopathy and rhabdomyolysis. This indicates that CM in Sri Lanka is an important yet overlooked cause of death in wild/captive animals and the incidence may be high although a few have been reported and confirmed. According to literature, ungulates are more prone to CM, of which zebra, deer and giraffe are considered highly susceptible. Once precipitated, the prognosis is very poor and no specific treatment is available except for supportive care. Therefore, prevention of CM is regarded as the best option. Accordingly, recommendations were made to incorporate more suitable and improved/upgraded tools and techniques for handling animals, and to provide proper training to animal handlers to minimize fear, stress, struggling and handling time for the animals. It was further advised to practice regular training of zoo animals, to help them adjust to the presence of humans and handling procedures.

*Keywords***:** Capture myopathy, rhabdomyolysis, cardiomyopathy, captive animals, stress

Serologic identification of *Treponema pallidum* (syphilis) antibody among Sri Lankan toque macaques and leaf monkeys

Nihal Pushpakumara[1*], Kanchana Mallawa[2] and Niroshan Jayasekara[3]

[1]*Wildlife Health Management Center, Department of Wildlife Conservation, Ampara*
[2]*Department of Wildlife Conservation, Jayanthipura Road, Baththaramulla*
[3]*Provincial General Hospital, Badulla, Sri Lanka*

*Corresponding author: *npkumara29@gmail.com*

Studies on *Treponema pallidum* (TP, syphilis) in monkeys had been conducted in other countries but not in Sri Lanka. Treponemes cannot easily be cultured in traditional laboratory settings which is one reason for such meagre information on it. The objective of this study was to identify the presence of syphilis antibody among Toque macaques (TM) and leaf monkeys (LM) in Sri Lanka. Animals were from two sources. Firstly, from six wildlife health centers (Ampara, Aththidiya, Lunugamwehera, Polonnaruwa, Randenigala and Udawalawa). Blood samples (3ml/head) were collected from the saphenous vein into EDTA tubes, with physical restraint using trained animal handlers (42 TM and 8 LM). Secondly (70 TM and 10 LM), from the wild which were sedated with xylazine (0.30 mg/Kg) and ketamine (10 mg/Kg). All together 130 (70 male and 42 females from TM and 6 male and 12 female from LM) samples were subjected to antibody test, using a commercially available SD Rapid Test (Bio Line, STANDARD DIAGNOSTIC, INC) kits. The test was performed using 20µl of whole blood from each sample and 4 drops of diluent. The remaining volume of blood in all samples were centrifuged, serum separated and were transported to the laboratory for venereal disease research laboratory test (VDRL). Inactivated serum (0.05 ml) was taken into a well which was mixed with one drop of cardiolipin antigen using a 18G needle, and rotated at 180 rpm for four minutes. Every test was accompanied with known reactive and non-reactive controls. Two (2/112, 1.8% 1 male, 1 female) TM from Ampara and three (3/18, 16.6% 1 male and 2 female) LM, one from Girithale and two from Ampara were positive for the Rapid test indicating presence of TP specific antibodies (IgG, IgA, IgM) in blood. Same samples were positive in the VDRL test highlighting a natural presence of *Treponema pallidum* among TM and LM with a zoonotic potential. Two female leaf monkeys who were positive for both tests had some healing vulval ulcers and one was with skin rash. Further studies are recommended to identify the strain of spirochete and prevalence of natural infection among monkey populations and its zoonotic potential.

Keywords: *Treponema pallidum*, toque macaques, leaf monkeys, Sri Lankan wildlife

Morphological characterization of *Amblyomma* spp. isolated from a land monitor: A case report

S.A.K.S. Fernando[1] and N.M.T. Anupama[2*]

[1]*PetVet Clinic, No. 155, Bernard De Zoysa Road, Colombo 05.*
[2]*Department of Veterinary Pathobiology, Faculty of Veterinary Medicine and Animal Science, University of Peradeniya, Sri Lanka*

*Corresponding author: *thilinianupama@vet.pdn.ac.lk*

Amblyomma ticks, part of the hard tick group (Ixodes), significantly impact wildlife, livestock, and public health by transmitting pathogens. *Amblyomma americanum* and *Amblyomma maculatum* are recognized in disease transmission, with recent studies highlighting a shift to reptilian hosts causing severe infestations. In Sri Lanka, interactions between wildlife and livestock in extensive farming can spread tick-borne diseases through sylvatic cycles, posing risks to livestock and handlers and communities near wildlife habitats. In this case report, a land monitor displayed severe tick infestation following a dog bite. Distinctive morphological traits of the ticks were evaluated using advanced microscopy techniques to obtain precise measurements. Ten female and male ticks were collected from the infected land monitor, and tick identification was conducted through measurements taken using the ZIESS ZEN Axiocam MRc microscope in collaboration with the ZIESS Zen CORE Lite 2012 microscopy application. The measurements represent the mean length of particular body compartments ± standard deviation. The measurements are as follows (Male=M, Female=F): Diameter (horizontal) of the body: M = 615.49 ± 29.5 µm, F = 837.02 ± 8.39 µm, length of the tick from the tip of the hypostome to the end of the body: M = 806.59 ± 19.1 µm, F = 1092.5 ± 30.92 µm; distance to anal groove from the hypostome: M = 392.84 ± 14.11 µm, F = 898.24 ± 26.14 µm; length of the capitulum: M = 264.67 ± 3.56 µm, F = 226.38 ± 5.21 µm; width of the capitulum: M = 165.41 ± 29.42 µm, F = 167.32 ± 76.23 µm; length of the scutum: M = 444.87 ± 180.3 µm, F = 301.12 ± 122.5 µm; width of the scutum: M = 615.25 ± 34.15µm, F = 426.32 ± 28.45 µm; length of palpi: M = 134.27 ± 5.54 µm, F = 131.42 ± 5.48 µm; length of chelicerae: M = 116.99 ± 24.32 µm, F = 111.5 ± 30.4 µm; width of hypostome: M = 53.12 ± 14.29 µm, F = 54.29 ± 8.41 µm; length of hypostomes: M = 28.02 ± 5.63µm, F = 29.52 ± 2.41 µm; length of setae: M = 22.13 ± 1.52 µm, F = 24.56 ± 1.84 µm. The measurements, along with morphological traits, strongly suggest that these ticks belong to the *Amblyomma* group. However, despite showing typical morphological features of *A. helvolum*, a comparison of measurements indicates a smaller size compared to established literature. Understanding the complexities of tick ecology, host interactions, and disease transmission dynamics within wildlife populations requires thorough morphological analysis and the application of molecular techniques. These tools are essential in identifying the complexities of these relationships, particularly considering documented instances of non-fatal hypersensitivity reactions and zoonotic impacts. Further molecular studies are necessary to confirm taxonomic classification and understand the potential impact of *Amblyomma* ticks on animal health and disease transmission.

Keywords: Ticks, morphological identification, *Amblyomma*, reptiles

First report of Dermocystidiosis in Koi carps (*Cyprinus carpio* var. koi) from a hobbyist tank from Kurunegala, Sri Lanka; A case report

K. L. N. Ananda[1], S. S. K. Liyanage[1], R. A. U. Kaushalya[1], S. A.S. Indunika[2], A.W. Kalupahana[1], K.K. Wijesundera[2], T. A. Gunawardana[2], N. M. T. Anupama[2] and S. S. S. De S. Jagoda[1*]

[1]*Centre for Aquatic Animal Disease Diagnosis and Research (CAADDR), Department of Veterinary Pathobiology, Faculty of Veterinary Medicine and Animal Science, University of Peradeniya*
[2]*Department of Veterinary Pathobiology, Faculty of Veterinary Medicine and Animal Science, University of Peradeniya, Sri Lanka*

*Corresponding author: *samanthika@vet.pdn.ac.lk*

The genus *Dermocystidium* infects a wide range of freshwater and marine fish. Despite being unicellular protists classified in the superclass *Mesomycetozoea*, they also share some features of the kingdom Fungi and produce motile, infective zoospores which encyst and enlarge to form giant, spherical, multinucleated cells inside the host. Dermocystidiosis is clinically manifested as spherical or elongated, pinkish to red, raised swellings or cysts in the epithelial tissues of the skin, fins, and gills, mostly in adult fish. The confirmatory diagnosis depends on wet mounts and histopathological analysis of the lesions. The present study describes cutaneous infection caused by *Dermocystidium* spp. in koi carps in Sri Lanka. The outbreak under study occurred in a hobbyist pond in Kurunegala in February 2024. Twelve imported koi carps were reared in a cement pond. Six fish showed reddish cyst-like lesions on the skin that ultimately ruptured leaving ulcers. Two fish died within a course of two weeks. Two symptomatic fish (approximately 400g weight, 1 feet length) were submitted to CAADDR (Centre for Aquatic Animal Disease Diagnosis and Research) for diagnostic investigations. Clinical examination showed macroscopically visible cutaneous cysts (1-1.5 cm) on multiple locations in the skin and fins. Localized erythematous lesions and 1-2 deep ulcers were also found in one fish. Wet mounts of scrapings from the lesions were observed under the light microscope. For histopathology, affected skin tissue was excised under anaesthesia, routinely processed, and stained with haematoxylin and eosin. Observation of wet mounts revealed that both fish were infected with *Dermocystidium* spp. The parasite was identified based on the structure and morphology. Histopathological examination of skin lesions revealed spore-containing cysts within the epidermis, lined by a single layer of epithelial cells. The spores appear unicellular, containing a large central vacuole and a peripheral nucleus. According to our knowledge, this is the first report on the occurrence of *Dermocystidium* spp. in koi carps in Sri Lanka. Although rare and non-fatal in most cases, *Dermocystidium spp.* diminishes the market value of koi and predisposes them to secondary bacterial infections. Considering possible direct transmission and wide host range of the pathogen, additional studies are needed to understand its prevalence within the country.

Keywords: Koi carp, *Dermocystidium* spp., Dermocystidiosis

Comparing the prevalence of parasitic infestations in freshwater ornamental fish samples received in 2022/2023 with 1999/2000 at the Veterinary Investigation Center, Welisara, Sri Lanka

N.D.T. Sirisena*, C.M.S. Pathirana and D.A.H.Y. Senarath

Veterinary Investigation Centre, Welisera, Sri Lanka

* Corresponding author: *vic_welisara@yahoo.com*

The ornamental fish industry in Sri Lanka has emerged as a significant export industry with over 100 species of attractive fish varieties. The objectives of this research were, 1) to evaluate the prevalence of parasites in freshwater ornamental fish samples submitted to Veterinary Investigation Centre (VIC), Welisara, Sri Lanka, during the period from 2022-2023, and 2) to compare it with that of samples submitted to the VIC during the period from 1999-2000. Ornamental fish samples (n=1202) received from Animal Quarantine Office, Colombo and Katunayake as bi-annual surveillance samples and export samples were used in this study. Gross observations by naked eye followed by microscopic examinations of skin, gill and intestines were carried out to identify the parasites. The prevalence of different parasitic species was compared with that during the period from 1999-2000, using Fisher's Exact Test (R Studio). All parasitic species identified during 2022-2023 were from biannual surveillance samples, but export samples were totally free of parasites. *Dactylogyrus* spp. was the most abundant in both time periods, and significant reduction of prevalence was observed in *Dactylogyrus* spp., *Gyrodactylus* spp. and *Trichodina* spp. (18.4% to 9.48%, 9.9% to 0.17% and 9.3% to 0.5%, respectively). *Tetrahymena* spp, *Lernaea* spp. and *Ergasilus* spp. were not found during 2022-2023. Interestingly, *Oodinium* spp. had increased from 1.7% to 2.08%. *Ichthyopthirius multifillis*, *Trichodina* spp., *Argulus* spp. and *Capillaria* spp. were among the other species observed. The reduction of prevalence of certain parasitic species may be due to the awareness of stakeholders on biosecurity measures, impact to the industry by parasites, and control methods. Regular surveillance and attention by relevant authorities may have also influenced them to maintain the standards. The upsurge of prevalence of *Oodinium* spp. may be due to its' ability of photosynthesis which helped their survival over normal parasitic control measures. It is important to ensure the submission of representative samples for screening before export shipments

Keywords: Ornamental fish, parasitic infestations, prevalence, surveillance

Surgical correction of ruptured medial collateral ligament and joint capsule of an Ostrich (*Struthio camelus*)

G. M. Vidura[1]*, J. J. Wesly[1], H. M. H. J. De Silva[1], R. M. A. N. Senevirathne[2] and K. Nizanantha[1]

[1]*Department of Farm Animal Production and Health, Faculty of Veterinary Medicine and Animal Science, University of Peradeniya*
[2]*Pet Vet Clinic, No 155, Kirula Road, Colombo 5, Sri Lanka*

Corresponding author: vgajanayaka@gmail.com*

Ostriches (*Struthio camelus*) are renowned for their remarkable bipedal running abilities, making their legs prime subjects for studying mechanical forces. The ostrich ankle joint, also known as the intertarsal joint, is a critical component of its leg anatomy. It allows for the storage and release of elastic energy, reducing the metabolic cost of running. The joint is stabilized by strong ligaments that prevent dislocation and provide support, including collateral, plantar, intertarsal, and dorsal ligaments. This case highlights a one-year-old male ostrich that was presented to the Farm Animal Veterinary Teaching Hospital with an acute traumatic injury. Clinical examination revealed instability in the left pelvic limb, an external skin laceration on the ankle joint with rupture of medial collateral ligament and joint capsule. No palpable fractures were detected. Radiographs of the limb further confirmed no fractures. No abnormalities were detected in hematological analysis. Based on the above examination findings, surgical correction of the ruptured medial collateral ligament and joint capsule was required. The ostrich was anesthetized with midazolam (2 mg/kg IM) and butorphanol (2 mg/kg IM),-followed by 10% ketamine (30 mg/kg IM). The bird was positioned in right lateral recumbency. Standard aseptic procedures were followed. The ligament and the joint capsule were sutured with simple interruptions using 2-0 VICRYL®. Before closure, gentamicin was administered to the joint. The skin was sutured with nylon. An external bandage (3M™ Coban™) was applied to support the joint stability. Postoperative care involved monitoring the ostrich for complications, managing pain, intravenous fluid therapy, and ensuring the stability of the repair. The bird was discharged 48 hours after surgery, showing no complications and demonstrating the ability to walk. This case underscores the importance of accurate diagnosis and appropriate surgical intervention in managing ligament injuries in ostriches. The successful recovery of this ostrich highlights the effectiveness of current veterinary surgical practices and postoperative care protocols for large avian species. The ostrich ankle joint is significant not only for its role in the bird's remarkable locomotor abilities but also for the broader implications in evolutionary biology, biomechanics, robotics, sports science, orthopedics, and conservation.

Keywords: Ostrich, intertarsal joint, ligament

Bacterial Pododermatitis in privately owned captive elephants (*Elephas maximus*) in Sri Lanka

U. H. S. Lakmal [1*], N.M. Aberathne [1], T. M. S. K. Piyadasa [1], A.S. Dilshan [2], A. Dangolla[1]

[1]*Department of Veterinary Clinical Sciences, Faculty of Veterinary Medicine and Animal Science, University of Peradeniya.*
[2]*Department of Microbiology, Faculty of Medicine, University of Colombo, Sri Lanka*

*Corresponding author: *uhslakmal@gmail.com*

Pododermatitis, commonly known as foot or hoof disease or foot rot, poses a significant health challenge in captive elephants. This condition entails inflammation, ulceration, and infection of the foot pads, resulting in pain, lameness, and compromised mobility and is a serious welfare concern. Pododermatitis used to be a very common clinical ailment among captive elephants in Sri Lanka in the past. its current status has not been examined recently. Pododermatitis can be caused by a variety of factors including bacterial infections, fungal infections, mite infestations, physical injuries such as lacerations etc. Poor environmental conditions, such as unsanitary living spaces, hard or abrasive surfaces, and inadequate nutrition, can also contribute to the development of this condition. In this study, we aimed to investigate the aetiology of bacterial pododermatitis. During August 2022, a total of 42 captive elephants brought for Kandy Esala Perehera were examined, with the objective of identifying pododermatitis cases. A total of 14 elephants (33%) displayed foot lesions which related to pododermatitis with open wounds in at least one foot. Affected feet were cleaned with clean water, and swabs from lesions in those 14 elephants were collected aseptically and were submitted to Microbiology laboratory, Department of Microbiology, Faculty of Medicine, University of Colombo, following standard protocol. Culture, isolation and subsequent biochemical tests were performed to identify pathogenic aerobic bacteria involved. Five distinct types: *Staphylococcus epidermidis, Pseudomonas aeruginosa, Escherichia coli, Klebsiella pneumoniae,* and *Enterobacter cloacae* were identified from the lesions. It is noteworthy to mention, that this is the first time that genus *Pseudomonas* and genus *Enterobacte*r were isolated from elephant foot lesions in Sri Lanka. Additionally, *Staphylococcus epidermidis* was also identified as a new bacterial species in foot lesions among elephants in Sri Lanka. It is of interest to note the presence of *Klebsiella pneumoniae* from elephant foot lesions, a bacterium known to be associated with common respiratory and urinary tract infections. In the literature, anaerobes have not been searched for most of the time possibly because clinical pododermatitis lesions are frequently opened and relatively more attention has been paid for aerobes. The findings indicate that multiple pathogens contribute to septic pododermatitis in captive elephants. Accurate identification of the causative agent is essential for effective treatment and promotes prudent use of antimicrobials.

Keywords: Elephants, pododermatitis, biochemical tests

Current status of diagnosing cardiac diseases in Sri Lanka

Surangika Hapuarachchi*, Rohana Hettiarachchi and Sumith Wanniarachchi

PetsVCare Animal Hospital, Colombo 05, Sri Lanka

*Corresponding author: *surangiha@gmail.com*

Any abnormality of the heart is defined as heart or cardiac disease. A wide range of heart diseases are reported in dogs including congenital abnormalities to age related weakening of the cardiac function (acquired). The number of heart diseases registered at our animal hospital in Sri Lanka shows an increasing pattern. Approximately, more than10% of the animals brought to our hospital have some form of cardiovascular disease. Diagnosis of heart diseases are made, initially by examining for clinical manifestations which are due either to inadequate blood flow through the organs and resulting signs of exercise intolerance, weakness, and fainting(syncope) or to blood flow obstructing up in organs, which causes fluid to leak and accumulation from blood vessels into tissues, respectively. Subsequently, ECG, X-ray radiography, hematological examinations and echocardiography are used for the definitive diagnosis. These abstract reports the total number of cardiac examinations that were conducted during the first six-month period in 2023 at PetsVcare Animal Hospital, Colombo, Sri Lanka. Of the total number of dogs brought in with clinical signs of heart diseases, about 95% of them were confirmed to have any of the heart diseases ranging from congestive heart failure (A consequence of many types of heart disease, the heart's inability to pump adequate blood to the body), endocarditis, arrhythmias, pericardial disease, valvular disease (congenital and acquired), myocardial disease (dilated/hypertrophic cardiomyopathy) to heart base tumors. The stages of cardiac diseases (A, B1, B2, C and D) can be determined with thoracic radiographs, electrocardiography and echocardiography. A total of 200 echocardographic, 500 thoracic radiographic and 475 electrocardiographic examinations were performed during this period to identify these heart diseases. It could be concluded that the increasing trend of heart diseases among dogs in Sri Lanka may be due to the increasing overall interest in veterinary cardiology and the availability and easy access for the modern diagnostic tools.

Keywords: Cardiac diseases, dogs, electrocardiography, echocardiography

An unusual presentation of cube-shaped urinary stones in a15-year-old dog: A case report

D.A.H.Y. Senarath*, K.P.I.R. Kahatapitiya, M.M.K.S. Senarathne, H.E.M.K. Bandaranayake, K.W.D.M.Y.W. Wickramasinghe and K.M.G.W.C.P.B. Abeyrathne

Department of Veterinary Clinical Sciences, Faculty of Veterinary Medicine and Animal Science, University of Peradeniya, Sri Lanka

*Corresponding author: *yasarasen96@gmail.com*

Urolithiasis is a common complication of urinary tract disorders in canines that require prompt diagnosis and intervention to prevent serious complications. Precipitation and the crystallization of several minerals are linked to the production of calculi. The shape of urinary calculi is determined by several factors namely the chemical composition and the location of the urinary tract that they are formed. A 15-year-old, intact, male, Doberman dog was presented with a one-month history of reduced appetite, vomiting and stranguria, progressing to complete hematuria, recumbency and anuria. Clinical examination revealed pyrexia, tachycardia, poor body condition, halitosis, and severe abdominal pain at the time of presentation. Abdominal radiographs revealed square-shaped urinary calculi obstructing the pelvic, penile, and perineal urethra. Urinalysis revealed alkaline urine (pH=8, SG = 1.04). Microscopic examination of urine sediment revealed haematuria, pyuria, epithelial cells, casts, and many envelope-shaped urinary crystals. Abnormal CBC findings included anemia, thrombocytosis and left shifted inflammatory leukogram. The dog was azotemic (BUN:340 mg/dL) and had increased serum creatinine (3.1mg/dL). Urinary catheterization with retrograde urohydropropulsion was unsuccessful to remove uroliths. Therefore, an emergency cystotomy was performed. Prior to the surgery comprehensive preoperative care, including intravenous fluid therapy, analgesia, and antibiotic prophylaxis, was administered. A standard surgical procedure for cystotomy was achieved followed by a meticulous urohydropropulsion using normal saline and lubricating gel to expel over 35, cube shaped uroliths (L=W=H= 4.5mm to 2mm). Postoperative care focused on monitoring, pain management, antimicrobial therapy, and metabolic management to prevent recurrence. Despite aggressive intervention, the patient's prognosis remained poor, leading to his demise within hours postoperatively. This case is notable for discovering pure square-shaped bladder stones in dogs, a finding not documented in existing literature. Emphasizing the need for thorough investigation and documentation in veterinary clinical practice.

Keywords: Urolithiasis, cystotomy, retrograde urohydropropulsion, struvite urolithiasis, cube-shaped uroliths

Clinical presentation, diagnosis, treatment and treatment outcome of salivary mucoceles in dogs: a case series

K.P.I.R. Kahatapitiya*, K.W.D.M.Y.W. Wickramasinghe and H. Ariyarathna

Department of Veterinary Clinical Sciences, Faculty of Veterinary Medicine and Animal Science, University of Peradeniya

*Corresponding author: *roshankahatapitiya89@vet.pdn.ac.lk*

A salivary mucocele is an accumulation of saliva leaked from a damaged salivary duct in a tissue space. It is usually seen in dogs and very rarely in cats. The causes of salivary mucocele include trauma, sialoliths and salivary neoplasia. Despite the common occurrence of salivary mucocele in dogs, only a limited number of case reports are available in veterinary literature. This article describes the clinical presentation, diagnosis, treatment and treatment outcome of 11 dogs with salivary mucoceles presented to the Veterinary Teaching Hospital, University of Peradeniya. Seven of the dogs diagnosed with salivary mucoceles were males. The age of the dogs ranged from 2 -10 years. The dog breeds included German shepherd (n=3), Golden retriever (n=1), Dachshund (n=3) and crossbred dogs (n=3). The presenting complaint of dogs included soft, non-painful lump in the ventral neck area (n=7), difficulty in swallowing (n=2) and pain upon opening the mouth (n=1) and reduced appetite (n=6). The duration of the symptoms ranged from 4 days to 1 ½ months. One dog was previously diagnosed with a salivary mucocele by a regional veterinarian and saliva was removed by aspiration, but the condition recurred after five days. The locations of the salivary mucoceles were mandibular (n=5), sub lingual (n=5) and ventral neck (n=1). The diagnosis of salivary mucocele in all cases was confirmed by fine needle aspiration cytology (FNA). All cytological smears displayed windrowing and contained increased number of neutrophils (n=3), hemosiderin-laden macrophages (n=4), haematoidin crystals (n=4) and bacteria (n=1). The causes for salivary mucocele were identified as trauma and inflammation (n=4), salivary adenocarcinoma (n=1) and idiopathic (n=3). All dogs were treated surgically under general anaesthesia;surgical drainage (n=5), surgical drainage with removal of salivary gland (n=5) and surgical drainage with removal of salivary carcinoma (n=1). In addition to surgical intervention, the dogs were prescribed with antibiotics (n=5), anti-inflammatory drugs (n=3) and asked to put an Elizabethian collar (n=3). The treatment outcome was excellent in all dogs except one dog which had a salivary gland adenocarcinoma who died a few weeks after the surgery. This study highlights the need for further investigations with higher number of cases to determine the most likely causes and best clinical and surgical practices for canine salivary mucocele.

Keywords: salivary mucoceles, clinical presentation, diagnosis, treatment, dog

Successful surgical management of a splenic rupture in a stray dog following an RTA: A case report

W.M.D. Ashinika*, A.M.H. Shashikala, M.N. Buddhika and B.Y. Amarasinghe

Happy Pet Animal Hospital, Wethara, Sri Lanka

*Corresponding author: *dumadhanieashinika@gmail.com*

Splenic Rupture is one of the most detrimental outcomes of Road Traffic Accidents (RTA) in dogs compared to cats due to its anatomical location. The spleen which is the largest organ of the lymphatic system is a blood-pooling organ and its' rupture can lead to severe internal haemorrhage resulting in anaemia, shock, and ultimately death of the patient. Partial splenectomy, total splenectomy, and splenorrhaphy are the different surgical procedures used to correct splenic ruptures depending on the severity of bleeding. This communication outlines a successful surgical correction of a ruptured spleen through splenorrhaphy in a two-year-old, crossbreed dog presented to the Happy Pet Animal Hospital, Wethara, following a RTA. At presentation, the patient was bright, alert and responsive, and had a distended abdomen with significant fluid accumulation. Skin bruises were evident in the umbilical region which diverted our attention towards bladder rupture, however upon catheterization, it was ruled out. Abdominal ultrasonography revealed the presence of free fluid in the abdomen and an intact bladder. An ultrasound-guided abdominocentesis confirmed hemo-abdomen. The patient was kept under observation with supportive treatment, during which he became pale drastically. Thus, an emergency exploratory laparotomy was performed under general anesthesia using ketamine followed by xylazine premedication with the prior consent of the owner and found a hemoabdomen with a ruptured spleen. Autotransfusion of approximately 350 ml of blood was carried out to save the life of the patient from blood loss. The ruptured splenic capsule was sutured using 3/0 vicryl suture material in a simple interrupted suture pattern and bleeding points were sutured as an attempt to minimize bleeding. After 5 hours of successful surgery, the patient was medically managed with I/V treatments for another 5 days with ceftriaxone, metronidazole, tranexamic acid, tramadol, and other supportive treatments. The dog exhibited rapid improvement during post operative treatment and the patient has been in good health since then.

Keywords: Splenorrhaphy, abdominocentesis, autotransfusion

Successful correction of Rt & Lt humeral fractures of Blue Indian Ring-necked Parrot by retrograde intramedullary pin placement and splint application

K.H.A.T.D. Peiris*

PetVet Clinic, Kirula Road, Colombo 05, Sri Lanka

*Corresponding author: *arjunepeiris1995@gmail.com*

The tubular pneumatic long bones of the birds present unique challenges in veterinary orthopedics, nevertheless various forms of fracture fixation have been applied in bird orthopedics. A blue Indian ringneck parrot presented with bilateral humeral fractures following an accident. The right wing had a closed complete oblique mid-humeral fracture, while the left wing had a closed complete oblique proximal humeral fracture. Anesthesia was induced using an oxygen and isoflurane supply in a closed anesthetic cage, with continuous isoflurane administered via an oxygen mask to maintain anesthesia.The bird was positioned in dorsal recumbency with wings extended laterally. Feathers were removed from the surgical site on the medial side of the right wing, which was then aseptically prepared with diluted chlorhexidine solution. A 1mm intramedullary pin was utilized in a retrograde method: inserted proximally from the fracture site towards the shoulder joint, exiting at the craniolateral aspect of the greater tubercle, and driven back through the medullary canal to exit at the fracture. The fracture was reduced, and the pin was driven distally while preserving the elbow joint. Normal saline was used to clean the fracture site before closure with absorbable sutures (PDS 4-0). On the left wing, a cast was applied to support the humerus, and white tape was used to prevent wing flapping and maintain positioning. Postoperatively, the bird received meloxicam and enrofloxacin for seven days. An Elizabethan collar (E-collar) was used until the intramedullary pin was removed. Follow-up appointments occurred every seven days for 21 days post-operation, during which splints were changed as needed. Radiographs were taken before pin removal to monitor healing progress. After 21 days, the parrot demonstrated successful recovery, regaining the ability to flap its wings. Tape had to be reapplied twice during the recovery period. The study concludes that employing proper surgical and anesthetic techniques, combined with efficient surgical procedures and meticulous postoperative care, can minimize complications and improve outcomes in avian orthopedics. This case highlights the importance of tailored treatment approaches in managing complex fractures in avian patients.

Keywords: Humerus, retrograde method, splint

Clinical presentation and diagnosis of three multilobular bone tumors in dogs

K.A.R.K. Perera*, S. Kabilan, H.E.M.K. Bandaranayake, N.M. Aberathne and H. Ariyarathna

Department of Veterinary Clinical Sciences, Faculty of Veterinary Medicine and Animal Science, University Peradeniya, Sri Lanka

*Corresponding author: *rkperera27@gmail.com*

Multilobular tumor of bone (MTB) is an uncommon tumor that commonly affects the skull of middle-aged to elderly, medium- or large-breed dogs. This report describes three dogs whose clinical and diagnostic findings are consistent with MTB. All dogs presented with a non-painful, well-defined bony mass on the skull. The age of the dogs ranged from 7 to 12 years, and the breeds included a Rhodesian Ridgeback, a German Shepherd, and a mixed-breed dog. In addition to the skull lesions, clinical signs included reduced appetite (n=3), vomiting (n=2), mild head tilt (n=1), and concurrent neoplasms (n=1). Skull lesions were identified by the owners 1–4 weeks prior to presentation. Vital parameters and neurological examinations were normal in all three dogs. Plain lateral skull radiographs of all three dogs revealed well-demarcated mixed radiodense and radiolucent areas consistent with the "popcorn ball" appearance typical for MTB. The adjacent bones did not show osteolysis. Fine needle aspiration from the skull lesions of all three dogs revealed an atypical population of mesenchymal cells admixed with pink to magenta matrix material, suggestive of osteoid or chondroid produced by the neoplastic cells. None of the owners consented to either surgical resection or euthanasia, even after explaining the severity of the disease progression. Upon the owner's request, with an understanding of the possible side effects, the first dog received chemotherapy with doxorubicin (30 mg/m² q3 weeks) and showed a mild reduction in tumor size after two doses. But treatment was discontinued due to severe hemoparasitism, and the dog died after 3 months. The second and third dogs received only supportive care, including analgesics. However, dogs 2 and 3 died 2 ½ months and 1 ½ months post-diagnosis, respectively. Generally, MTB is a slow-growing tumor, with few case studies available. Therefore, the prognosis is unclear. In the Sri Lankan context, the prognosis of MTB is currently inconclusive due to difficulty in obtaining clients; consent for the surgery and the unavailability of radiation therapy, which are the recommended treatments. However, this case series provides a useful insight into the differentiation of MTB from the other tumors present in dogs.

Keywords: Multilobular tumor, bone, MTB, metastasis, popcorn ball, mesenchymal cells, doxorubicin

Two phenobarbitone responsive canine sialadenosis cases

K.P.I.R. Kahatapitiya*, M.R.M.C.P. Abeyrathna, T.D.M.C. Wickramasinghe and H. Ariyarathna

Department of Veterinary Clinical Sciences, Faculty of Veterinary Medicine and Animal Science, University of Peradeniya, Sri Lanka

*Corresponding author: *roshankahatapitiya89@vet.pdn.ac.lk*

Sialadenosis is a painless, non-inflammatory, non-neoplastic bilateral enlargement of the mandibular salivary glands. Retching, gulping and hypersalivation are common presenting clinical signs of dogs with sialadenosis and occasionally dogs are presented with vomiting or regurgitation. There are two forms of sialadenosis; idiopathic or phenobarbital responsive form and the gastro-oesophageal pathology associated form. Currently there are only three sialadenosis case reports from Sri Lanka. Of them one case had been identified as an idiopathic sialadenosis while the other two cases were associated with spirocercosis. This paper includes the clinical presentation, diagnosis, treatment and treatment outcome of two canine sialadenosis cases. The two cases involved young (less than 3 years) crossbred male dogs. Presenting clinical signs included chronic vomiting, exophthalmos, hypersalivation severe emaciation and hyperesthesia. The general clinical examination revealed bilateral symmetrical enlargement of the mandibular salivary glands and poor hair coat. Laboratory findings revealed anaemia (Hct 24% and 22%) and mild hypoalbuminemia (Alb 2.6 mg/dL) in one dog. The differential diagnoses for enlarged salivary glands were sialoadenitis and sialadenosis. Salivary gland neoplasia was considered less likely due to the young age of the dogs. Plain thoracic radiographs of both dogs were unremarkable. Fine needle aspirations of the mandibular salivary glands of both the dogs revealed well differentiated salivary epithelial cells without a prominent background inflammation confirming the diagnosis of sialadenosis. Both dogs were treated with phenobarbitone (2mg/kg, PO, q12hrs) for two weeks with supportive treatments including antiemetic and anti-ulcer drugs. In both dogs, there was a marked reduction in clinical signs at the end of two weeks. At the two weeks' follow-up, phenobarbitone dose was reduced to 2mg/kg, PO, q24hrs and continued. As both the dogs responded well to phenobarbitone therapy these two cases are most likely idiopathic or phenobarbitone responsive sialadenosis cases.

Keywords: Phenobarbitone, sialadenosis, canine

Canine Babesiosis in Gatambe Government Veterinary Hospital, Peradeniya, Sri Lanka

D.M.Y. Sathsarani[1], G.V.T. Ananda[1], A. W. Kalupahana[2*], P. Kumara[3], D.M.M.B. Dissanayake[3] and D.K. Silva[3]

[1]*Faculty of Veterinary Medicine and Animal Science, University of Peradeniya*
[2]*Department of Veterinary Pathobiology, Faculty of Veterinary Medicine and Animal Science, University of Peradeniya*
[3]*Government Veterinary Hospital Gatambe Peradeniya Sri Lanka*

[*]Corresponding author*: anilwkalupahana@yahoo.com*

Canine babesiosis, a global health concern in dogs, is a tick-borne disease caused by a protozoan parasite belonging to the genus Babesia. The two most common species involved are *Babesia gibsoni* and *Babesia canis*. The risk of spread of babesiosis is higher during warmer months. However, depending on the geographical region and the tick species involved, transmission can occur year-round. Studies in Sri Lanka show a high prevalence of babesiosis, particularly *Babesia gibsoni*, in Kandy district. To detect the presence of babesiosis, 148 dogs showing clinical signs suggestive of babesia infection were selected from Gatambe Veterinary Hospital (GVH) during January to March 2024. Thin blood smears from all the above dogs were prepared and sent to the Veterinary Research Institute (VRI) and Veterinary Teaching Hospital (VTH) for microscopical examination, reports were obtained and analyzed. Out of the 148 babesia suspected blood smears, 41 were reported to be Babesia positive out of which 32 were *Babesia gibsoni* and the rest had *Babesia canis*. Out of positive cases (41), 23 were males and 18 were females. A total of 19/41 positive dogs were crossbreds, followed by German Shepherds (8/41), Labradors (6/41), Pomeranians (3/41), Rhodesian Ridgebacks (3/41) and Lion Shepherds (2/41). The dogs below 3 years of age were more frequently (31/41) affected. This study reports that 41/148 dogs brought to GVH with clinical signs suggestive of Babesiosis, were positive for the Babesia organism in thin blood smears, while the parasite was not found in majority. A detailed study must be launched to examine the reasons for majority of babesia suspected dogs for not being thin blood smear positive.

Keywords: Canine babesiosis, *Babesia gibsoni*, *Babesia canis*, blood smear, infection

Successful rabbit ovariohysterectomy surgical and anesthetic procedure

K.H.A.T.D. Peiris* and Dayani Siriwardane

PetVet clinic, Kirula Road, Colombo 05, Sri Lanka

*Corresponding author: *arjunepeiris1995@gmail.com*

Though male rabbit's castration is the common method practice in Sri Lanka, there is a high demand for doe ovariohysterectomy as well. This study focuses on the procedure of rabbit ovariohysterectomy, emphasizing its importance for both preventive neutering and treatment of reproductive diseases. The protocol begins with comprehensive clinical examination, blood analysis, and ultrasonography to rule out pregnancy. Preoperative care includes administering Ranitidine (5mg/kg), Metoclopramide (0.5mg/kg), and Amoxicillin (7mg/kg) to the rabbits.For anesthesia, Ketamine (15mg/kg), Midazolam (0.5mg/kg), and Buprenorphine (0.01mg/kg) are used for sedation, followed by Isoflurane induction via an endotracheal tube. The surgical procedure starts with ventral abdomen clipping and aseptic preparation. A midline ventral incision, just caudal to the umbilicus, is made with careful attention to avoid intestinal damage. Subcutaneous tissue and Linea alba are dissected to expose the cecum, while the urinary bladder is reflected to locate the uterus. Ovaries are then exteriorized, and the dorsal blood supply covered by retroperitoneal fat pad is identified. Ovarian artery and vein are ligated cranially with encircling sutures, followed by the same procedure on the opposite ovary. Broad ligaments are dissected to the level of uterine arteries, and vessels are ligated for hemostasis. Uterine horns are resected just caudal to the cervixes, ensuring careful ligation of associated vessels. Post-surgery, Meloxicam (0.3mg/kg) is administered for 5 days to manage pain. The study reports no complications in the two rabbits observed during or after the procedure. Key considerations include maintaining sterility, avoiding damage to surrounding tissues like the cecum, and employing preventative measures such as medications to prevent gut stasis. The protocol highlights the importance of meticulous surgical technique and proper anesthesia management in achieving successful rabbit ovariohysterectomy. In summary, the study provides a detailed overview of the surgical and anesthetic procedures necessary for performing rabbit ovariohysterectomy effectively, demonstrating its significance in reproductive health management and disease prevention among rabbits.

Keywords: Ovariohysterectomy, cecum, retroperitoneal fat pad

Overview of Lumpy Skin Disease outbreaks in Badalkumbura veterinary range, Monaragala district, Sri Lanka

R.A.D.S. Ranathunga[1*], D.A. K. Prabasara[2], P.C. Ubhayasiri[3], N.P. Kaluarachchi[3] and D.M. Siriwardana[4]

[1] *Government Veterinary Office, Department of Animal Production and Health, Badalkumbura,*
[2]*Government Veterinary Office, Department of Animal Production and Health, Buttala*
[3]*Postgraduate Institute of Science, University of Peradeniya, Peradeniya, Sri Lanka*
[4] *Deputy Provincial Director office, Department of Animal Production and Health, Monaragala*

[*]Corresponding author*: dilshara123@yahoo.com*

Badalkumbura is one of the fourteen veterinary ranges in Monaragala district in Uva province. Lumpy skin disease (LSD) is a viral disease that causes a huge economic impact in dairy industry. There were two outbreaks of LSD in 2021 and 2023 in this range. Data from the 2023 outbreak based on information reported by farmers to the veterinary office for the period of July to October 2023 is reported here. There were 993 registered cattle in the veterinary division and 6.4% (n=64) were reported as clinically positive cases in fifty farms out of 224 total cattle farms of the veterinary division. Out of the 64 cases, thirteen animals were males (20.31%) and fifty-one animals were females (79.68%). Sixteen were pregnant cows (31.37%) and thirty-five animals were non-pregnant (68.62%), including heifers. Most of the affected cattle were Jersey crossbred (n=38, 59.37%) and others were local (n=11, 17.18%), Sahiwal (n=8, 12.5%), Friesian (n=5, 7.8%) and Kilari (n=2, 3.12%). All of the affected animals showed nodules on skin [mildly (<=5) or severely (>5)] with or without wounds. Other clinical signs of the animals were edema in left hind limb (18.75%) edema in left forelimb (1.56%), edema in right hindlimb (9.37%), edema in right fore limb (3.12%), edema in brisket (9.37%), limping (26.56%), hyper salivation (17.18%), ocular or nasal discharge (23.43%) and abortions (1.56%). Proportion of the animals with normal, poor and no appetite were 43.75%, 50% and 6.25% respectively. Moreover, reduced milk production was also observed in affected animals. Mortality, morbidity and case fatality rates were 201.4, 6445.1 and 3.12% per 100,000 animals, respectively. These figures were higher than the outbreak in 2021 which were reported as 0, 1019.99 and 0% per 100,000 animals respectively. Farmers in Badalkumbura Veterinary division experienced economic losses due to animal deaths, milk reduction and abortions. Almost all the farmers (100%) of affected herds had no knowledge about the method of transmission of the disease. Regular vaccination against LSD is important to prevent the disease. Farmer awareness programs should be implemented to inform the farmers about the disease to achieve early diagnosis, prevention and control. Further follow ups are needed to be carried out for infected animals to identify future complications such as infertility.

Keywords: Lumpy Skin disease, cattle, morbidity, mortality

Bovine schistosomus reflexus as a cause for dystocia; A case report

K.A.L. Piyum*, G.M. Vidura, E.M.E.G.S.H. Eakanayake, J.W.Y. Senevirathna and K. Nizanantha

Veterinary Teaching Hospital, Department of Farm Animal Production and Health, Faculty of Veterinary Medicine and Animal Science, University of Peradeniya, Sri Lanka

Corresponding author: lakshitha.piyum@gmail.com*

Schistosomus reflexus (SR) is a congenital abnormality morphologically classified as coelosomian. It is a rare fetal monstrosity observed primarily in ruminants but can also be found in other animal species. SR is more common among bovines. It is characterized by abnormal morphological deviations, including exposed abdominal and thoracic viscera, termed "schistosomus," and a marked ventral curvature of the thoracic vertebrae and spinal cord, termed "reflexus." This condition involves an inversion of the spinal column, with the occipital of the head lying near the sacrum, and the body and chest walls bent laterally. The exposed thoracic and abdominal viscera increase the incidence of dystocia in cattle.The presented case involves a three-and-a-half-year-old Jersey crossbred bovine with a history of protruding intestine part and abdominal viscera. Upon clinical observation, it can be differentially diagnosed as fetal monstrosity or urine rupture. Once through physical and vaginal examination, it revealed a deformed fetus in the pelvic cavity. Based on vaginal examination, a tentative diagnosis of dystocia due to malposition and presentation was made. Retropulsion, adjustment of extremities and manual traction were employed to relieve a schistosomus reflexus monster. Clinically, rectal temperature, heart rate and respiratory rate were in the normal range. Correction of this type of anomaly can be achieved through fetotomy or cesarean section to avoid damage to the dam. Due to the failure of manual manipulation and the risk of further pelvic and uterine damage, a cesarean section was chosen. Posterior epidural anesthesia was administered to prevent excessive straining. The surgery was successful, and with proper fluid therapy, parenteral antibiotics, and other supportive treatments, the dam showed a good prognosis. The fetus exhibited characteristics of fetal monstrosity, diagnosed as SR, displaying a curved spinal cord and eviscerated abdominal contents. The exact mechanisms that predispose the formation of SR are still under investigation. Some hypotheses suggest embryological mechanisms related to post-gastrulation ventral wall closure defects or genetic factors. In cases of fetal monstrosities, saving the dam should be the primary objective. A prompt approach can yield a good prognosis.

Keywords: schistosomus reflexus, fetal monstrosity, fetotomy, cesarean section

Isolation and identification of *Vibrio parahaemolyticus* in mud crabs (*Scylla serrata*): A case report

P. C. Ubhayasiri[1*], N.P. Kaluarachchi[1], K.M.S.M.K. Senavirathne[1] and K.H.D.T Kasagala[2]

[1]*Postgraduate Institute of Science, University of Peradeniya, Peradeniya, Sri Lanka*
[2]*Central Veterinary Investigation Center, Veterinary Research Institute, Gannoruwa, Peradeniya, Sri Lanka*

[*]Corresponding author*: pumudithaubhayasiri@gmail.com*

Vibrio parahaemolyticus is one of the important foodborne pathogens which causes significant economic problems within the aquaculture industry. The objective of this study was to isolate and identify *Vibrio parahaemolyticus* from mud crabs (*Scylla serrata)* in a commercial crab breeding farm in Mannar. The study focused on the confirmatory diagnosis of *Vibrio parahaemolyticus* infection to investigate causes for the increased mortality of mud crabs (3-5 crabs per day) recorded in the farm during the heavy rainy season from November to January. According to the farm records, water quality parameters and crab stocking density were in acceptable ranges for mud crab farming. Except the reduction in feed intake, normal behaviour was observed in mud crabs and any external parasites were not observed in gills, carapace and on the body. Hepatopancreas, muscles and gonad samples were collected from five dead mud crab specimens to isolate organisms and disease investigation was performed by necropsy examination, microbial culture, biochemical tests and Polymerase Chain Reaction (PCR). No specific lesions were detected during the necropsy examination and observations of the microbial culture revealed the presence of *Vibrio parahaemolyticus* by characteristic blue to green centered colonies on TCBS agar. Except the urease test and sulfur indole motility (SIM) test, all other biochemical tests including oxidase test, catalase test, citrate test, gelatinase test and ONPG (O-Nitrophenyl-β-D-Galactopyranoside) test gave positive results for the specimens. Characteristic red (alkaline) slant and yellow (acidic) butt was observed when the samples were subjected to TSI (Triple Sugar Iron) test. *Vp. flaE* gene, specific for *Vibrio parahaemolyticus* was targeted during PCR and a 897 bp amplicon was produced. A positive band for *Vibrio parahaemolyticus* was observed in agarose gel electrophoresis. In conclusion, mud crab specimens were positive for *Vibrio parahaemolyticus* infection which was the potential cause for the increased mortality of mud crabs in the aforementioned farm. Drastic salinity changes and oxygen depletion caused by heavy rainfall which are stressful for mud crabs may have raised the risk of vibriosis occurrence. Therefore, regular water quality and health management programmes should be implemented in mud crab farms for disease prevention and for optimizing the aquaculture production.

Keywords: Vibrio parahaemolyticus, mud crabs, foodborne pathogens, vibriosis

The impact of different polyphenol-rich sugarcane extract concentrations in drinking water on broiler growth performance, meat quality and mucosal lesions in the small intestine

R. Senaarachchi[1], U. D. Jayasekara[2], P. Weththasinghe[3], B. C. Jayawardana[3], H. E. L. De Seram[2], K. Nizanantha[2], P. G. A. Pushpakumara[2], M. Flavel[4] and N. D. Karunaratne[2]*

[1]*PJM Bioactives (Pvt) Ltd, 723/33, Lake Terrace, Athurugiriya*
[2]*Department of Farm Animal Production and Health, Faculty of Veterinary Medicine and Animal Science, University of Peradeniya, Sri Lanka*
[3]*Department of Animal Science, Faculty of Agriculture, University of Peradeniya*
[4]*Bioactives Division, The Product Makers, Melbourne VIC, Australia*

Corresponding author: nkarunaratne@vet.pdn.ac.lk*

Plant-derived polyphenols can protect living cells against oxidative damage which negatively affects broiler performance. The objectives were to evaluate polyphenol rich sugarcane extract (PRSE) supplementation in drinking water on broiler performance, meat quality and small intestine mucosal lesions. Cobb 500 broilers (496) were housed on litter-floor pens, with 4 treatments: no PRSE, 0.05% PRSE, 0.25% PRSE from day 0 to 35, and a transition dose of 0.25% (day 0 to 17) to 0.05% PRSE (day 18 to 35). Treatments were prepared by manually adding the respective levels of PRSE to the drinking water. Each of the 2 rooms was portioned into 8 pens. Each treatment was randomly assigned to 2 pens in each room. Birds were fed with commercial feed *ad-libitum*. Body weight gain, feed intake, water intake and feed-to-gain ratio were evaluated on pen basis on day 11, 22 and 35, and mortality was recorded daily. Meat quality and sensory analyses were completed on day 1, 7 and 14 after slaughtering (2 birds per pen). The presence of mucosal lesions in the duodenum, jejunum and ileum were recorded from the same carcasses. Data were analysed using one-way ANOVA for randomized complete block design considering statistical significance as $p \leq 0.05$. Supplementing PRSE in drinking water did not affect broiler performance, mortality and small intestine mucosal lesions. Both 0.05% and 0.25% PRSE reduced meat Thiobarbituric acid reactive substance levels on day 1 post-processing compared to the other treatments ($p < 0.01$). These concentrations increased the water holding capacity of meat on day 7 compared to the other treatments ($p = 0.02$). Birds receiving 0.25% and the transition dose of PRSE reduced meat colour luminosity on day 7 compared to the other treatments ($p < 0.01$). Consumer preference for meat colour ($p < 0.001$) and overall acceptability ($p = 0.003$) were higher with 0.05% and transition dose of PRSE compared to the control. Meat aroma was the highest with transition dose whereas lowest for 0.25% PRSE ($p < 0.001$). PRSE in drinking water did not affect broiler performance or small intestine mucosal lesions but 0.05 or 0.25% PRSE improved meat quality.

Keywords: Antioxidant, poultry, TBARS, water holding capacity, lipid peroxidation

Socio-economic factors influencing family poultry production in Ampara district, Sri Lanka

Athambawa Mohamed Jiffry[1]*, Mohamed Aboobucker Nadheer[2] and Abdul Hakeem Mohamed Hafeel[3]

[1] *Deputy Director's Office, Department of Animal Production and Health, Trincomalee*
[2] *Provincial Director's Office, Department of Animal Production and Health, Trincomalee*
[3] *Animal Husbandry and Farmer Training Centre, Department of Animal Production and Health, Kanchirankudah, Sri Lanka*

*Corresponding author: *amjiffry29@gmail.com*

Increased production of poultry, both commercial and family, is vital for food security at both household and community levels. Family farming is mainly considered as small-scale poultry production system. The village poultry production helps to reduce rural malnutrition. The aim of this study to identify problems and constraints to develop family poultry farming as a tool of rural development and to motivate the farmers to adopt better management practices in backyard farming. The questionnaire survey was conducted among 150 farmers in Ampara district with equal distribution by pre-tested questions. Data were analysed by Stata 17 and results were obtained as descriptive studies of social and farm factors and regression analysis for knowledge and training on farming. It was revealed that family poultry production mainly managed by women (76%). Farmers were interested in rearing village chicken than other alternative poultry. The main feed sources are from kitchen waste (54%) which include coconut scraps, food scrap, waste fish and 82% of respondence fed rice polish, broken rice, and allow the birds for green leaves from the free range. Poultry keepers have poor knowledge on managing a village poultry operation (Average knowledge score of farmers is 3.32). Most chicken houses were constructed using discarded materials because, on average, 50% of poultry houses are in poor condition. The leading causes of chicken mortality are attributed to inadequate nutrition, primarily due to the high cost of commercial feed, and predator-related issues alone account for 58%. Farmers need to educate on feeding and management of birds by focusing on farmer training and practice due to poor knowledge among farmers. Day-old chicks are produced naturally by broody hens (58%) and can also be purchased from government (58%) and private (28%) backyard chick producers. In conclusion, family poultry producers rely heavily on discarded feed and rice by-products, and they are impacted by inadequate knowledge and predator issues. To enhance the family poultry farming need to be considered training the farmers to prepare nutritional feed by them self (e.g. Fly larvae) and encourage village level breeders to provide required chicks are essential for sustainable development of family poultry.

Keywords: Family poultry, malnutrition, village chicken, food security, rural farming

Assessment of methane emission levels of dairy farming in Sri Lanka

M.I.G. Jayathilaka*

Livestock Development Division, Ministry of Agriculture, Battaramulla, Sri Lanka

*Corresponding author: *jayatilakemanoji@yahoo.com*

Dairy farming, primarily through enteric fermentation, contributes to emission of methane, which is a potent greenhouse gas (GHG). Methane is estimated to have a global warming potential of 27-30 over 100 years. Therefore, it is important to investigate the existing emission levels and develop strategies to reduce the emission for a sustainable dairy industry. But there is a scarcity of research on methane emission from dairy in Sri Lankan context. Therefore, this preliminary study aimed at estimating the average annual methane emission from dairy Cattle and Buffalo based on the basic characterization of livestock tier 1 method of the greenhouse gas inventories under the inter-governmental panel on climate change (IPCC) guideline, 2006. In deriving the average annual emission estimates the national figures of livestock population from 2019 to 2022 were collected from the published statistics of the Department of Animal Production and Health. The default emission factor (EF) for Buffalo, Dairy Cattle and non-dairy Cattle were 55, 58 and 27 while 49, 50, 32 were the country specific emission factors respectively. Average annual methane emission based on the default EF of Cattle was estimated as 49.0 Gg/year while 28.3 and 20.7 Gg/year were estimated for dairy and non-dairy subcategories respectively. Methane emission from Buffalo was estimated as 20.65 Gg /year. In terms of CO2 equivalent methane emission from Cattle based on default was estimated as 2.3-ton CO2 eq /animal/year, while Buffalos showed 1.8-ton CO2 eq /animal /year. Further, the Methane emission of Cattle based on the country specific EF was estimated as 48.9 Gg/year, while dairy and non-dairy subcategories were estimated as 24.4 and 24.5 Gg/year respectively. Methane emission from Buffalo was estimated as 18.6 Gg/year. In terms of CO2 equivalent methane emission from cattle based on country specific EF was estimated as 2.1-ton CO2 eq/animal/year while 1.5-ton CO2 equivalents for Buffalo. In conclusion, this basic descriptive research provides the existing methane emission estimates for Cattle and Buffalo as a baseline for in-depth analytical studies and to formulate adaptation and mitigation strategies for a sustainable dairy sector.

Keywords: Dairy, methane, enteric fermentation, emission factors

Impact of management practices on milk production efficiency in a selected group of dairy farms in Sri Lanka

Anushka Lenagala* and Achala Samarasundara

Department of Animal Production and Health, P.O. Box 13, Gatambe, Peradeniya, Sri Lanka

**Corresponding author: anushka47sjb@gmail.com*

The study was aimed to assess the critical nexus between best management practices and milk production efficiency within dairy farming systems in Sri Lanka. Currently, national milk production meets less than forty percent of the country's demand. Small-scale dairy farms contribute around 90% of national milk production, yet their production efficiency remains low due to the lack of adoption of best practices. A total of 811 dairy farms were selected across the country based on their production levels (20 liters or more per day), management systems (intensive and semi-intensive), and methods of fodder cultivation or purchasing. These farms were evaluated on twenty-four criteria, including feeding management, breeding management, calf management, transient cow management, milking methods and housing systems. Baseline data were recorded during farm visits through farmer interviews and farm observations. From the 24 criteria, 7 best practices were selected and analyzed under three categories (≤20 L, 21- 49 L, ≥50 L producing farms) using Excel statistical functions. The percentage of farms with free stall sheds was 4%, 6%, and 9% respectively for the ≤20L, 21-49L, and ≥50L categories. Milk production increased with the supply of 24-hour drinking water (23%, 23%, 40%), twice-a-day milking (42%, 63%, 83%), performing strip cup tests (5%, 7%, 15%), keeping calves in a calf pen (7%, 6%, 12%), supplying chopped grass (34%, 41%, 47%), and providing Total Mixed Ration (TMR) (15%, 19%, 31%). Chi-square statistics (df = 2, $p<0.05$) showed that a significant relationship between milk production and these variables except for use of free stall sheds. Since these free-stall sheds were built very recently, it may not have taken long enough to show its effect. The percentage of animals producing more than 10 liters of milk per day was increased (7%, 13%, 31%) with the adoption of best practices. Breeding performance indicators, such as 12–14 month calving interval (46%, 55%, 60%) and first calving at 24-27 months of age (19%, 23%, 32%), also improved with the adoption of these practices. This study reveals that adopting best practices results in higher milk production and farm productivity within dairy farms.

Keywords: Dairy, management practices, milk production, farm productivity

Evaluation of hygienic status of the poultry processing plants and further processing plants in Sri Lanka and future challenges for exportation

Erandi Gunasekara[1*], L.M.P. Wijemanne[2] Dhammika Kumarasingha[3], J.K.H. Ubeyratne[4], M.A.R. Priyantha[5], P.I.P. Perera[1] and M.D.N. Jayaweera[6]

[1]*Veterinary Regulatory Affairs, Department of Animal Production and Health*
[2]*Dairy Technology Laboratory, Veterinary Research Institute, Gannoruwa*
[3]*Animal Health Division, Department of Animal Production and Health, Getambe*
[4]*Central Veterinary Investigation center, Veterinary Research Institute, Gannoruwa*
[5] *Bacteriology Division, Veterinary Research Institute, Gannoruwa*
[6]*Ministry of Agriculture and Plantation Industries, Colombo, Sri Lanka*

*Corresponding author: *erandigunasekara82@yahoo.com*

Sri Lanka and the rest of the world continue to experience the fastest growth in poultry meat demand. Moreover, Sri Lanka exports poultry meat and products to other countries, and the Department of Animal Production Health facilitates this process. This study was conducted to evaluate the hygienic status of the poultry processing and further processing plants in 18 processing establishments for a period of one year (January–December 2023) that were either directly or indirectly involved in exports. The biosecurity status of the poultry processing establishments and the microbiological quality of the fresh and further processed products were studied with a checklist and during bi-annual surveillance respectively. A surveillance program was implemented to test for *Salmonella*, *Staphylococcus aureus*, *E. coli*, *E. coli* O157:H7, and Coliforms in meat and meat products. The program included a sampling plan that covered food handlers, contact surfaces, the environment, and water sources within the processing establishments. The percentages of processing establishments that were found to maintain satisfactory, good, and very good biosecurity standards are 11%, 61%, and 28% (n=18), respectively. Veterinarians for antemortem and postmortem inspections were not available in half of the poultry processing establishments. And 27% had kept an acceptable level of records. According to the testing plan, only 11% (n = 2) of the processing establishments were found to have microbiological limits that were negative or within the acceptable range. Salmonella strains were isolated from 4% of the 547 samples tested, and 26% of the 312 samples exceeded microbiological limits. Our findings revealed, for export-oriented production, much intervention is needed at the primary production and processing levels to improve the hygiene of the processing establishments in order to improve the microbiological quality of the final products to assure food safety by meeting the standard microbiological limits.

Keywords: Poultry processing plants, further processing plants, Sri Lanka, export

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Establishment of a multiplex PCR to detect *E. coli* O157:H7

N.W.H.C.R. Nanayakkara, A.B.S. Pabasara, S.A.J.N. Subhasinghe, W.M.D.H. Suranimal[1], N.D. Wimalarathna, K.S.A. Kottawatta, R.S. Kalupahana and Thusitha K. Karunarathna*

[1]*Department of Veterinary Public Health and Pharmacology, Faculty of Veterinary Medicine and Animal Science, University of Peradeniya, Peradeniya, Colombo*

**Corresponding author: thusithakarunarathna@gmail.com*

Escherichia coli (E. coli) is a Gram-negative, facultative anaerobic bacillus in the Enterobacteriaceae family that typically inhabits in the mammalian gastrointestinal tract. Among six main pathotypes of *E.coli*, O157:H7 is the most widely known enterohemorrahagic *E.coli* (EHEC) strain. Hemorrhagic colitis and hemorrahagic uremic syndrome are the most common human sporadic infections caused by *E.coli* O157:H7. Therefore human *E. coli* O157:H7 infection has become a contemporary public health issue. Even though biochemical techniques have been employed for the diagnosis of *E.coli* O157:H7 routinely, molecular diagnostics are considered as standard for confirmatory diagnosis. Among different molecular methods, conventional PCR is considered as a convenient and gold standard method with higher sensitivity. As there is no established molecular based method to confirm *E. coli* O157:H7 in the local laboratory, we aimed to establish a PCR assay for confirmatory diagnosis of *E.coli* O157:H7 from the isolates identified as *E. coli* using conventional diagnostic methods including biochemical tests. First *E.coli* ATCC 25922 and a previously characterized *E. coli* O157:H7 were cultured on a selective medium: CT-SMAC agar and resulted colonies were sub-cultured on nutrient agar to be used for presumptive, conventional identification: EMB agar and Indole test. Using boiling method, DNA were extracted from the conventionally identified colonies and multiplex PCR was performed to confirm the organism as *E.coli* and *E.coli* O157:H7 in a single reaction as per the published literature to amplify genes: *16s rRNA* and *eaeA* to confirm *E. coli* and *E. coli* O157:H7 respectively. Amplicons at the sizes of 550bp (*16s rRNA*) and 450bp (*E.coli* O157:H7) were resulted confirming the successful method establishment. *Staphylococcus aureus* was used as one of the controls. This established multiplex PCR can be used in future studies to confirm *E. coli* O157:H7 from the presumptively diagnosed *E. coli* while saving time and cost for a range of biochemicals deserving the various benefits of multiplex PCR.

Keywords: Escherichia coli O157:H7, multiplex PCR, hemorrhagic colitis and hemorrhagic uremic syndrome

Analysis of epidemiological data from 2015 to 2022 to evaluate the effectiveness of rabies elimination strategies adopted to reduce human rabies deaths in Sri Lanka

P.C. Ubhayasiri*, N.P. Kaluarachchi and K.M.S.M.K. Senavirathne

Postgraduate Institute of Science, University of Peradeniya, Peradeniya, Sri Lanka

Corresponding author: pumudithaubhayasiri@gmail.com*

Rabies, a viral zoonotic disease is one of the major global public health concerns. Since the virus predominantly circulates among dogs, eradicating rabies in dog populations is the most logical strategy to eliminate the risk of rabies to humans. The objective of this study was to evaluate the effectiveness of rabies elimination strategies on reducing the human rabies deaths in Sri Lanka. The study was based on epidemiological data obtained from the Public Health Veterinary Services of the Ministry of Health, Sri Lanka during the period of 2015-2022. The rates of human rabies deaths, mass dog vaccinations and female dog sterilizations were calculated for the entire country. Data analysis was carried out by descriptive statistics and Pearson bivariate correlation method using SPSS software (22). Human rabies death rate (per 1000000) had increased from 1.09 in 2015 to 1.27 in 2022 and the mean human rabies death rate per year was 1.15. The highest human rabies death rate (1.41) was observed in 2020 and the lowest (0.90) was observed in 2016. Rates of mass dog vaccination had decreased from 51.78% in 2015 to 42.64% in 2022. Similarly, female dog sterilization rates had decreased from 5.33% in 2015 to 1.22% in 2022. The highest rate of mass vaccination (51.78%) was achieved in 2015 while the highest rate of female sterilization (5.56%) was achieved in 2016. The correlation between human rabies death rate and mass dog vaccination rate was negatively associated but not significant. ($r = -0.148$, $P = 0.727$). The correlation between human rabies death rate and female dog sterilization rate was negatively associated and was significant. ($r = -0.743$, $P = 0.035$). Non-significant correlation between mass vaccination rate and human rabies death rate may be attributed to factors such as poor understanding of dog ecology, poor vaccination coverage and frequency. However, the analysis does not account for the impact of mass vaccination and surgical sterilization programmes conducted by Non- Governmental Organizations and various other groups. In conclusion, rabies elimination strategies must be based on a deeper understanding of all aforementioned factors to achieve zero human rabies deaths in Sri Lanka.

Keywords: Rabies, zoonotic, human rabies deaths, rabies elimination, Sri Lanka

Phenotypic and genotypic antibiotic resistance of *E. coli* from poultry feed from medium scale poultry farms in Sri Lanka

C.H.D. Kanishka, C.H.D. Dhanushka, D. L. Ranathunga, R.A.I.M. Ranasinghe, K.W.G.S.M. Kularathne, M.W.C.D. Palliyeguru* and G.A. Gunawardana

Veterinary Research Institute, Gannoruwa, Peradeniya

*Corresponding author: *chamari@live.co.uk*

Antimicrobial resistance (AMR) of bacteria is a global public health threat. In 2019 AMR contributed to 4.95Mn human deaths, highly exceeding the predictions. It adversely affects food safety. Among the animal origin food, poultry dominates as a protein source. For poultry production feed is the primary input. The feed can carry microbes into poultry body systems introducing AMR. Therefore, a study was conducted to determine the resistance profiles and associated resistance genes for selected antimicrobials in bacteria isolated from 15 samples of layer(N=6) and broiler(N=9) feeds, from medium scale farms. Following standard protocols, feed samples were cultured on nutrient and Brilliance *E. coli* agar (Oxoid®). From the resulted coliforms, 29 *E. coli* colonies were subjected to Kirby-Bauer disk diffusion method (CLSI, 2020), to detect the susceptibility to five antibiotics: amoxicillin, ampicillin, tetracycline, enrofloxacin and ciprofloxacin. Ten isolates were examined with PCR for, BlaSHv and TetA genes representing β-Lactam and tetracycline resistance respectively. From isolated *E. coli*, 44.8%, 41.4% and 10.3% were totally resistant and 6.9%, 13.8% and 3.4% were intermediately resistant for ampicillin, amoxicillin and tetracycline respectively. Only one totally resistant isolate each, was identified for enrofloxacin and ciprofloxacin. Three isolates (10.3%) indicated resistance to, at least three antibiotics. Thirteen isolates were resistant to Ampicillin and Amoxicillin as a cluster. Five of the tested isolates were carrying blaSHv and only one had tetA gene. All blaSHv gene consisting *E. coli* were phenotypically resistant to ampicillin and amoxicillin. The tetA gene manifested similarly, indicating genetic and phenotypic resistance correlation. Only eight (27.6%) isolates were entirely sensitive to all tested antibiotics. The finding is an eye opener, revealing a significant proportion (72.4%) of the *E. coli* isolates from poultry feed, has developed antibiotic resistance. More than a half (51.7%) of the *E. coli* indicated multi drug resistance, urging to limit the usage of antibiotics in poultry. On the other hand, enrofloxacin and ciprofloxacin indicated the lowest resistance rates suggesting their potential clinical efficacy. Direct multiplication of resistant bacteria in poultry gut could transmit resistant genes into gut flora that can contaminate poultry products causing food safety issues. Excreta could contaminate the environment. To prevent therapeutic failures, alternative strategies are essential. Further the feed contaminating sources needs to be investigated and preventive measures are a crucial step to improve antibiotic susceptibility of microbes.

Keywords: Poultry feed, antimicrobial resistance, genes, Sri Lanka

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Ileocecal valve dysfunction in a canine: A clinical case study

Surangika Hapuarachchi* and Sumith Wanniarachchi

PetsVcare Animal Hospital, 506/7, Elvitigala Mawatha, Colombo 05, Sri Lanka

*Corresponding author: *surangiha@gmail.com*

Dysfunction of the ileocecal valve in dogs can present with a variety of clinical signs and may require surgical intervention when conservative management fails. A 20-month-old, 20kg body weight bull mastiff was presented with one month history of intermittent vomiting with the smell of cow dung. Physical examination revealed dehydration with poor body condition. The animal was lethargic, responded only to the eye contacts and had sluggish appetite. Diagnostic blood work revealed high WBC and low PCV. Abdominal radiographs showed distended intestinal loops and there was no difference observed between the small intestine and the large intestine. A laparotomy was performed and realized the dysfunction of the ileocecal sphincter. A very scanty amount of faecal matter was found. A resection and anastomosis of the ileocecal sphincter was performed using catgut (absorbable 4 Metric Round Bodied) suture material, the wall of the ileum and caecum was inspected for any intrinsic lesions. The dog received intensive postoperative care, including IV fluids, analgesics, antibiotics, and gradual reintroduction of a high-fiber diet (normal homemade food) after 30 days. Regular monitoring of bowel movements and abdominal palpation was conducted to ensure normal gastrointestinal function. The dog recovered uneventfully. This paper suggests that laparotomy followed by resection and anastomosis of the ileocecal sphincter, combined with careful postoperative management, can be a successful treatment modality for severe ileocecal valve dysfunction in dogs when conservative treatments fail. This also alarms the need of understanding the route cause for this condition, since 20 similar cases have been reported throughout the last two decades to this institute. While 100% of those conditions have been successfully corrected with surgical intervention, 20 % of them failed to survive owing to various other causes such as nutritional defects. This case signifies the importance of using a multidisciplinary approach in veterinary surgery and internal medicine to achieve optimal patient outcome.

Keywords: Laparotomy, ileocecal valve dysfunction, canine, veterinary surgery

Successful surgical correction and management of transverse colon obstruction of a three-quarter horse: A case study

U.D. Jayasekara[1]*, G.M. Vidura[1], H.M.H.M. Rupathunga[1], M. Thusithran[1], S.M.D.S.K. Nayakarathna[1], H.M.H.J. De Silva[2], L.S. Jayawardana[3] and K. Nizanantha[1]

[1]*Department of Farm Animal Production and Health, Faculty of Veterinary Medicine and Animal Science, University of Peradeniya.*
[2]*Veterinary Department, Kandy Municipal Council, Kandy*
[3]*Dr. Vet Animal Clinic, Kengalla. Sri Lanka*

*Corresponding author: *udarajayasekara1995@gmail.com*

Equine colic could be life-threatening unless managed properly. This report describes the first surgical correction of a colicky horse at a newly established equine surgical facility in Sri Lanka. A two-years-and-three-months old three-quarter mare from a free-grazing horse rearing facility referred to the Farm Animal Veterinary Teaching Hospital (FA-VTH) with a complaint of colic persisting for more than four hours. The mare exhibited pawing, flank watching, struggling, and attempts to lie down and roll on the ground. Other clinical signs included anorexia, adipsia, obstipation, anuria, hyperthermia, dehydration, and absent borborygmic sounds on the left abdomen. Per-rectal examination revealed absence of faeces and empty bladder. Mare was tentatively diagnosed with obstructive colic. Initially treated with fluid therapy, medications (Lhiflunex®, Omez®, Novasal®, Aminovital®), and oral administration of liquid paraffin. Due to lack of improvement, the mare was transferred to FA-VTH. USS revealed anechoic and hyperechoic areas in two adjacent segments of transverse colon suggesting an obstruction and surgery was required. Presurgical treatment included tetanus toxoid, Lhiflunex®, MD Peni-320®, and fluid therapy. Acemav® (0.05mg/kg, IM) and Calmant® (0.01mg/kg, IV) were administered as preanesthetics. Anaesthesia was induced with Ketamin® (2mg/kg, IV) and Dormicum® (0.05mg/kg, IV) and maintained with constant rate infusion (CRI) of total intravenous anaesthesia (TIVA) triple drip (1000ml solution containing Xylazin® 500mg, Ketamin® 1000mg, Dormicum® 25mg and normal saline) at 1.2ml/kg/hr flow rate, supplemented with top up doses of Xylazin® (0.5mg/kg, IV), Ketamin® (1mg/kg, IV) and Dormicum® (0.025mg/kg, IV). A laparotomy was performed, and the entire gastrointestinal tract was palpated from the rectum. The obstruction was located at the transverse colon, exteriorized and surgically corrected by incising and removing the obstruction (polyethene) and suturing with inverted Lembert suture pattern using USP 1 Corecryltm®. The laparotomy was then closed. The mare was transferred to the recovery box and recovered smoothly, urinating and defecating during recovery. The mare was kept N.P.O. for two days during which Penzid®, Lhiflunex®, Omez®, and fluid therapy were administered intravenously. After two days, semisolid feed was introduced and gradually transferred to solid feed. To prevent such conditions and ensure equine welfare, it is recommended that horses graze on garbage-free lands.

Keywords: Equine, pawing, flank watching, obstructive colic, total intravenous anaesthesia triple drip, TIVA

Successful surgical removal of a xanthogranuloma in a village chicken

G.M. Vidura[1*], K.A.L. Piyum[1], E.M.E.G.S.H. Eakanayake[1], J.W.Y Senevirathna[1], H.M.H.S. Ariyarathna[2] and K. Nizanantha[1]

[1]Veterinary Teaching Hospital, Department of Farm Animal Production and Health, Faculty of Veterinary Medicine and Animal Science, University of Peradeniya.
[2]Department of Veterinary Clinical Sciences, Faculty of Veterinary Medicine and Animal Science, University of Peradeniya.

Corresponding author: vgajanayaka@gmail.com*

Xanthogranulomas are non-neoplastic, discrete, yellow, nodular lesions that occur commonly in gallinaceous and psittacine birds, resulting from abnormal lipid metabolism. The most common sites for xanthogranulomas in birds include the tip of the wing, subcutaneous tissue of the breast, ventral abdomen between legs and around the vent. Xanthogranulomas are composed of many lipid-laden macrophages, multinucleated giant cells, free cholesterol, and varying amounts of connective tissue. This report describes the clinical signs, diagnosis, treatment and prognosis of an 8-month-old pet village chicken presented to the Farm Animal Veterinary Teaching Hospital, University of Peradeniya with a progressive 3x4cm diameter swelling on the ventral abdomen for two months. Radiographs revealed a well-demarcated subcutaneous soft tissue mass. The mass was not attached to bones or internal organs. Fine needle aspirates of the mass revealed many macrophages with abundant, intracytoplasmic clear lipid vacuoles of variable sizes and cholesterol crystals scattered in a highly haemodiluted background. The mass was diagnosed as a xanthoma/xanthogranuloma and after six hours of fasting surgical excision was performed under general anaesthesia (induced with midazolam (2.5 mg/kg IM) and ketamine (25 mg/kg IM). The surgical site was prepared following standard protocols. The capsule of the mass was approached through an elliptical skin incision. The subcutaneous connective tissue surrounding the mass was bluntly dissected to exteriorize, and then the mass was removed. The abdominal muscle and skin were closed with simple interrupted sutures using polyglactin 910 2-0 and nylon 4-0, respectively. Post-surgically the bird was treated with analgesics (flunixin meglumine 5mg/kg, IM) and amoxicillin (10mg /kg, oral) for 3 days. The bird recovered from anaesthesia uneventfully and discharged after three days. Histopathology of the excised mass revealed multiple lipid granulomas, each consisting of a central area of necrotic fat and cholesterol crystals surrounded by epithelioid macrophages and multinucleated giant cells, which was consistent with xanthogranuloma. The etiologies of xanthogranuloma in birds includes obesity, hyperlipidemia, genetic factors, and metabolic diseases. However, in the present case the cause is uncertain. The prognosis of surgical excision of a solitary xanthoma is generally favorable, although it depends on the affected organ and the surgical approach used.

Keywords: Poultry**,** xanthogranuloma, surgical correction

Overlapping flap technique for correcting palate defects in dogs and cats: A surgical approach

Ashen Nawode and Dayani Siriwardane*

PetVet Clinic, 151, Kirula Road, Colombo 05, Sri Lanka

*Corresponding author: *dayanimilna@yahoo.com*

Palate defects, whether acquired or congenital, pose significant challenges in maintaining the barrier between the nasopharynx and oropharynx. Acquired defects can result from various etiologies such as infections, neoplasms, or trauma, often necessitating surgical intervention. This study outlines the use of the overlapping flap technique to address hard palate defects in three young crossbreed cats with acquired defects and a three-month old Labrador puppy with a congenital cleft palate. The surgical procedure was performed under sedation using a combination of Medetomidine and Butorphanol, with Propofol induction and Isoflurane maintenance anesthesia. Careful precautions were taken to prevent aspiration, including proper cuffing of the endotracheal tube and the placement of a pharyngeal pack. Prior to surgery, thorough rinsing of the nasopharyngeal and oropharyngeal passages was conducted with Lactate Ringer's solution and 5% chlorhexidine. Incisions were strategically made 1 to 2 mm away from the teeth and along the rostral and caudal margins of one side of the defective palate to facilitate the creation of an overlapped flap. Additionally, another incision was performed at the medial margin of the defect on the opposite side to establish an envelope flap. Utilizing a periosteal elevator, the overlapped flap was elevated on one side, while an envelope flap was created on the other, ensuring preservation of the major palatine arteries. Following meticulous dissection, the overlapped flap was inverted and secured within the envelope flap using 2-0 or 3-0 PDS sutures. Horizontal mattress sutures were employed to achieve optimal apposition and tensile strength. Subsequent to the flap closure, soft palate cleft edges were debrided and were apposed in layers using simple interrupted sutures, extending from the midline of the cleft to the caudal level of the tonsils. Postoperatively, an esophageal tube was utilized for feeding during the week of hospitalization to minimize contamination of the surgical site, while administration of Cephalexin and Meloxicam was continued. The surgical method proved highly successful, with all patients showing no complications and swiftly resuming independent eating upon removal of the esophageal tube. This underscores the procedure's efficacy in enhancing their quality of life.

Keywords: Palate defects, flap technique, oropharynx, nasopharynx

Changes to empathy levels among veterinary undergraduates at the University of Peradeniya

W. D. Jayamini[1] and L. G. S. Lokugalappatti[2*]

[1]Faculty of Veterinary Medicine and Animal Science, University of Peradeniya
[2]Department of Basic Veterinary Sciences, Faculty of Veterinary Medicine and Animal Science, University of Peradeniya, Sri Lanka

*Corresponding author: *slokug@vet.pdn.ac.lk*

Empathy is essential for veterinarians, enabling them to build meaningful connections with clients and establish trust, which is crucial for delivering optimal animal care. In this study we employed a cross-sectional study design to investigate changes in empathy across four academic years among veterinary undergraduates at the University of Peradeniya Sri Lanka. Data were gathered using a pretested structured questionnaire developed with Google Forms incorporating 28 questions from the Davis Interpersonal Reactivity Index (IRI). The IRI measures four dimensions of empathy including Perspective Taking, Fantasy, Empathic Concern, and Personal Distress. The questionnaire was administered to all veterinary students across the four academic years in June 2023 making participation voluntary. Internal consistency of the survey was checked, and the data were analyzed using descriptive statistics and the means were compared using ANOVA and T test. A total of 197 veterinary undergraduates responded including 45 in the first, 50 in the second, 45 in the third, and 57 in the final years of study respectively. The study revealed that overall empathy levels among veterinary students significantly increased ($p<0.05$) as they progressed through their academic journey. Perspective Taking, which reflects the ability to understand others' viewpoints, showed consistent growth, indicating that students developed better skills for complex client interactions. The Fantasy dimension remained stable, suggesting a need to balance cognitive empathy with imaginative engagement. Empathic Concern, which measures compassion and emotional responsiveness, showed a substantial increase, reflecting an enhanced ability to connect emotionally with clients and their animals. Personal Distress scores remained high, indicating that students maintained their emotional regulation, a critical factor in preventing burnout in the demanding field of veterinary medicine. Our findings suggest that targeted training could further nurture empathetic skills in veterinary practitioners, enhancing their ability to meet clients' emotional needs and improve animal welfare. Consistently high Personal Distress scores highlight the importance of emotional regulation in veterinary education. Integrating empathy training into the veterinary curriculum could cultivate more compassionate and competent professionals, ultimately improving client-veterinarian relationships and the quality of care provided.

Keywords: Empathy, veterinary students, IRI, Sri Lanka

Emergence of *Pasteurella multocida* serogroup-F bacteria as a pathogen in rabbits in Sri Lanka

J.K.H. Ubeyratne[1*], K.M.G.W.C.P.B. Abeyratne[1], W.M.P. Bandara[1], S.M.T.S. Manchanayake[2], G.I.S. Perera[2], W. M.S.K. Wijekoon[2], D.M.S.N.B. Dissanayake[3], Nilukshi Liyanagunewardena[3], Prabash Kumarakeerthi[4], U.K.S.P. Alexander[4], C.T. Ambepitiya[1], R.P.U.A. Ariyadasa[1], S.K. Gunathilaka[1] and M.A.R. Priyantha[2]

[1]*Central Veterinary Investigation Center, Veterinary Research Institute, Gannoruwa,*
[2]*Pathology Division, Veterinary Research Institute, Gannoruwa*
[3]*Bacteriology Division, Veterinary Research Institute, Gannoruwa*
[4]*Vaccine Production Unit, Veterinary Research Institute, Gannoruwa, Sri Lanka*

Corresponding author: kamalikau@yahoo.com*

Pasteurella multocida is a Gram-negative coccobacillus that is a facultative anaerobe. It causes a multitude of animal diseases and is also known to cause zoonotic diseases. There are five commonly isolated serogroups: A, B, D, E and F. Fowl cholera in birds is caused by serogroup A, while hemorrhagic septicemia is caused by serogroups B and E. Additionally, serogroup D is the causative agent for atrophic rhinitis in swine. Serogroup F, originally described as avian adapted, was later discovered as a highly virulent subtype in rabbits. In May 2023, rabbit carcasses of Hyla breed were presented to the Central Veterinary Investigation Center, with the complaint of sudden and high mortality. Necropsy examination of carcasses revealed severe diffuse lung congestion, moderate diffuse liver necrosis and perihepatitis with congestion and hemorrhage. The brain and kidneys showed moderate congestion and hemorrhage. During histopathological examination, multifocal to locally extensive areas of hypercellularity could be observed in the lung with infiltration of many heterophils (neutrophils), some macrophages and a few lymphocytes accompanied by oedema. Perihepatitis, hepatocellular necrosis, perisplenitis was also evident and marked diffuse lymphocytic depletion was noted in spleen and lymph nodes. Varying degrees of congestion and haemorrhage were apparent in lung, liver, kidney and brain. Histological evidence was indicative of bronchopneumonia (suggestive of bacterial in origin) leading to septicaemia. Bacterial culture was performed from tissue samples on 5% sheep blood agar and MacConkey agar, the inoculated plates were incubated at 37 °C for 24 hours. Pasteurella multocida was isolated from the heart, lung, spleen and kidney of submitted rabbit carcasses. Polymerase chain Reaction (PCR) on isolated colonies revealed *Pasteurella multocida* serogroup F. Subgroup F was susceptible to enrofloxacin, gentamicin and tetracycline and were resistant to tylosin and neomycin. This is the first report of the isolation of Pasteurella multocida serogroup F in a rabbit colony. Thus, measures should be taken to improve biosecurity status in the rabbit breeding unit while minimizing stress on animals at the farm to combat against the virulent pathogen. As an effective control measure, an autovaccine was developed from the isolate and administered in susceptible age of rabbits.

Keywords: Pasteurella multocida, rabbit, bronchopneumonia, septicaemia

An insight to the impact of 2021 – 2022 economic crisis on small and medium scale poultry layer farming in Sri Lanka

D. L. N. Kumudinie[1*], D. M. U. N. K. Dunuwila[2], G. D.S. D. Senevirathne[1], L. A. G. Y. Mahanama[3], G. M. C. R. Karunarathne[4], W. A. C. I. Perera[5], S. K. S. Rathnasiri [6], N. D. T. Sirisena[7] and P.S. Fernando[1]

[1]*Division of Livestock Planning and Economics, Department of Animal Production and Health, Peradeniya*
[2]*Division of Veterinary Regulatory Affairs, Department of Animal Production and Health, Peradeniya*
[3]*District Veterinary Investigation Center, Pannala*
[4]*District Veterinary Investigation Center, Wariyapola*
[5]*District Veterinary Investigation Center, Chillaw*
[6]*District Veterinary Investigation Center, Homagama*
[7]*District Veterinary Investigation Center, Welisara, Sri Lanka*

*Corresponding author: *neshmadliyanage@gmail.com*

Poultry is one of the gravely affected industries during the recent economic crisis. Extended production cycle makes layer farming more vulnerable compared to broiler farming. Shock of economic crisis was expected to be poorly tolerated by small and medium scale farmers due to lack of resources and low cash flow. Therefore, a study was conducted to investigate the impact of economic crisis on small and medium layer farming and to identify reasons which force farmers to withdraw from or scaling down during 2021 – 2022 period. Thirty-six small and medium scale layer farmers were selected by convenient sampling plan representing ranges of poultry dense five Veterinary Investigation Centers. Farmers were interviewed using a pre-tested structured questionnaire during the period of September to December 2022. Performance parameters for white layers were analyzed using excel 2013. Performance indices were compared to standards of Bovans white in alternate housing as it is the mostly reared layer strain. Reasons for the scaling down or closing up of farming were listed. 7 out of 36 farmers had ceased farming during 2021 – 2022 period. Farm size had declined by 55% compared to 2021. Averages of age at peak laying (27 weeks), peak laying percentage (88%) and live weight at culling (1.5kg) are lower compared to the standards. The average age of culling (112 weeks) exceeds the recommended age but promoted by the high market demand for eggs. Only 11 farmers out of 29 had estimated the cost of production (COP) of an egg for their farm. COP of an egg was higher than the maximum retail price (MRP) in 64% of the farms. Average prices of main feed ingredients; maize, soybean meal, rice and rice polish had increased by 1 to 4-fold in 2022 compared to 2020. Adulteration and low feed quality reported by the farmers may attribute to lowering of performance. High feed cost is identified as the main reason for increase in cost of production. Imposing of MRP did not allow to match retail price against COP losing the farm profit.

Keywords: Layer farming, economic crisis, Sri Lanka

Predicting the incidence of subclinical mastitis in dairy cows using machine learning techniques

D. Herath[1], C.K. Walgampaya[2], K.M. Devindi[3], R.M.C. Deshapriya[3] and R.M.S.B.K. Ranasinghe[4*]

[1]Department of Computer Engineering, Faculty of Engineering, University of Peradeniya
[2]Department of Engineering Mathematics, Faculty of Engineering, University of Peradeniya,
[3]Department of Animal Science, Faculty of Agriculture, University of Peradeniya
[4]Department of Basic Veterinary Sciences, Faculty of Veterinary Medicine and Animal Science, University of Peradeniya, 20400, Sri Lanka.

*Corresponding author: *bimalka@vet.pdn.ac.lk*

Subclinical mastitis (SCM) is an economically important disease of lactating cows with a significant effect on the quantity and quality of milk produced. Therefore, early diagnosis of diseased cows is essential to minimize economic losses. This study aims to develop a model using machine learning (ML) techniques for the detection of SCM in a Sri Lankan context. Individual cow data (breed, lactation number, and days in milk) and milk production data [average (7 days) daily milk yield, test-day milk yield] collected from the farm records and physicochemical data of milk (fat, SNF, protein, lactose, density, pH, freezing point, and conductivity) and somatic cell count (SCC) measured at the laboratory were considered in developing the machine learning model. The data was gathered from three large-scale dairy herds in the upcountry from a total of 2420 milking cows from farms: A (n=1002), B (n=898) and C (n=520). In brief, the ML modeling included three steps: data preparation, Exploratory Data Analysis (EDA), model training, and model selection. After the first step, the threshold somatic cell count to classify a cow as positive for SCM was experimentally derived as 375,000 cells/ml. After EDA, a set of machine learning models were trained considering all the variables. The considered models were Nearest Neighbors, Linear SVM, RBF SVM, Random Forest, Neural Net, AdaBoost, Naive Bayes, and Quadratic Discriminant Analysis (QDA). The model training was done on data split as 80:20 train: test data split with fivefold cross-validation considering accuracy as the evaluation metric. The Naïve Bayes model demonstrated the highest accuracy of 74% on the training data. The developed ML models will assist in identifying the cows positive for SCM and thereby, decision-making in managing dairy herds. The performance of the models is being improved further by considering alternative data pre-processing techniques and appropriate feature selection to develop software to be used in dairy herds in Sri Lanka.

Keywords: Subclinical mastitis, dairy cows, machine learning, somatic cell count.

Coconut poonac as a potential dairy calf starter in restricted milk feeding programmes: A preliminary study

Y.K. Jayawardana[1], H.E.L De Seram,[1] S. Muthukumara[1], K. Nizanantha[1] and W.M.P.B. Weerasinghe[2*]

[1]*Departmnet of Farm Animal Production and Health, Faculty of Veterinary Medicine and Animal Science, University of Peradeniya, Peradeniya*
[2] *Veterinary Research Institute, Gannoruwa, Peradeniya, Sri Lanka*

Corresponding author: piyatilakw@yahoo.com*

Calf starters play an important role in restricted milk feeding programmes, meeting the nutrient requirements of pre-weaned calves, accelerating rumen development, and facilitating weaning. However, high-quality calf starters are often scarce and expensive in the local market. This preliminary study therefore aimed to evaluate the use of coconut poonac (COP) as a calf starter in pre-weaning feeding management. Six crossbred Jersey-Friesian calves (average BW 28.5±3.89 kg), housed in individual pens, were used in the study. Starting on day 4 of their age, the calves were fed COP (1-2 cm hand-broken pieces) *adlibitum*, alongside the recommended pre-weaning practices (10% of body weight of milk/day, small quantity of chopped straw, and *adlibitum* water) for conventional milk feeding programmes. Calves were gradually weaned after consuming approximately 750g of COP/day for three consecutive days. The daily intake of COP per individual was recorded while weekly body weights and weaning weights were used to calculate average daily gains (ADG). Faecal scoring was conducted daily during the first 14 days to assess gut health. Bi-weekly feed samples were collected for nutrient analysis. Weaning weights, ADG, and weaning ages of calves fed with COP were compared to expected values for conventional milk feeding under local conditions using a one-sample t-test. The mean metabolizable energy (9.72 MJ/kg/Dry matter) and crude protein content (20.7 ± 1.35%) of COP were within the recommended levels for calf starters. Coconut poonac intake steadily increased, with a significant uptick after the first two months. Compared to expected values, calves fed COP had higher ADG (mean 0.42 ± 0.017 kg/d; expected minimum 0.40 kg/d; $P = 0.041$) and lower weaning ages (mean 83 ± 2.8 days; expected 90 days; $P = 0.002$). The weaning weights (mean 2.2 ± 0.214 times the birth weight; expected 2 times the birth weight) did not differ ($P = 0.057$) from the expected values. Faecal scoring showed no signs of compromised gut health among the calves. The results suggest that the COP could be a potential calf starter, indicating the need for further research into its effects on calf growth and economic feasibility compared to available commercial starters.

Keywords: Calf starter, calf management, coconut poonac, growth performance, weaning

Optimizing Black Soldier Fly larvae (BSFL) breeding for sustainable animal feed production

M.N.M. Fouzi[1*], K.G.H.S. Kumari[1], L.G.F.K. Premalal[1], M.M.M. Rila[2] and W.M.P.B. Weerasinghe[3]

[1]*Department of Farm Animal Production and Health, Faculty of Veterinary Medicine and Animal Science, Peradeniya*
[2]*Ceylon Eco Harvest, 110, As Shaheed, Ashraff Road, Kattankudy 01*
[3]*Veterinary Research Institute, Getambe, Peradeniya, Sri Lanka*

[*]Corresosponding author: *mnmf@vet.pdn.ac.lk*

Black soldier fly larvae (BSFL; *Hermetia illucens*), effectively consume a wide range of organic wastes, converting them into nutrient-rich biomass high in protein and fat. This makes BSFL a sustainable alternative for production of protein and fat, benefiting various industries such as poultry, swine, and aquaculture while mitigating environmental pollution by reducing organic waste. This study examines BSFL rearing in various setups, including different breeding house sizes (1'x 1' x1' and 2'x2'x2 and 2'x2'x3'), controlled moisture levels (around 60%), and established plants (with house wastes) to facilitate breeding. Results indicate that BSFL efficiently convert digested waste into body mass, with both experimental methods proving successful. However, the initial breeding house size hindered egg-laying, necessitating a reduction in size to achieve successful breeding, albeit with increased time consumption in the outdoor method. It was found that 1 gram of eggs could produce up to 4 kilograms of larvae, with full growth taking approximately 21-25 days. 1g of eggs consumes 32 kg of organic waste to become 4 kg of larvae. Additionally, 30% of the organic waste that is fed to larvae becomes BSFL frass, which is an organic fertilizer. The study also explored the fluctuations in BSFL's nutritional composition from day 8 to day 16 of development. Crude protein levels gradually decreased, peaking at 46.29%, while crude fat levels increased, reaching 37.68%. The highest crude fiber level, (14.77%), was observed from day 11 to day 13, and the maximum total ash content (8.67%) was recorded from day 8 to day 10. These findings underscore the importance of selecting the optimal harvesting time based on desired nutritional content, allowing farmers to harvest larvae at different growth stages according to their specific needs for protein or fat. In conclusion, rearing BSFL is highly valuable for converting organic waste into high-nutritional animal feed. The study demonstrates varying levels of crude protein, fat, fiber, and ash contents at different stages of the BSFL lifecycle, highlighting the potential of BSFL as a sustainable solution for waste management and animal nutrition.

Keywords: Black soldier fly larvae, levels of crude protein, fat, fiber and ash, nutritional composition, house waste management

Evaluation of the goat cluster village project in Southern Province

M.N.M.D.S. Dharmawardane [1*], B.S.S. Perera [1], N. H. N. Priyanwada[2] and J. D. N. Jayawardana[1]

[1]*Ministry of Agriculture and Plantation Industries, 80/5, Govijana Mandiraya, Rajamalwatte Avenue, Battaramulla*
[2]*Department of Animal Production and Health, Southern Province, Sri Lanka*

*****Corresponding author: *mnadeekad@gmail.com*

Goat farming is one of the important livestock sub sectors in Sri Lanka, which has a high potential to develop as livestock business and helps to alleviate poverty in rural communities while providing animal origin protein. The Goat Cluster Village project was implemented with the objective of development of commercial level goat farming as an income generative path to cater to the market demand for mutton at an affordable price. The objective of this study was to analyze the success of the project and depending on the results to continue the same under the line Ministry funds. The survey was carried out in three Goat Cluster Villages that started in 2020 in Southern Province. The villages were located in Galle (Gonapinuwala and Habaraduwa VS Ranges) and Hambanthota (Agunakolapellessa VS Range). The government support was Rs. 200,000 per one beneficiary to construct a proper goat shed. A questionnaire was used to collect information from 2021 to 2023 and data were analyzed manually. The results revealed that from 50 selected beneficiaries (Gonapinuwala-15, Habaraduwa-19 and Agunakolapallasa-16) 68% were still engaged in the goat farming while 32% of farms were closed due to management difficulties. The numbers of kids born during the three years in each village was 889, 478 and 310 respectively and the average number of kids born in a farm was 59, 25 and 19. According to the finding, out of a total of 1,677 births, 318 kids died (18.9%) while, out of the total of 1,070 adults 152 adults died (14.2%). The farmers sold 1,337 animals for breeding purpose and 80 animals for meat purpose. It revealed that this project helped to expand the goat farming. Due to less demand for goat milk only 22% beneficiaries got income from milk, and it can be increased by value added products. During the 3 years period, the average farmer income per year from selling animals for breeding and meat purpose in Gonapinuwala, Habaraduwa and Agunakolapallasa villages were Rs.345,000 , Rs.196,579, and Rs.142,644 respectively. Therefore, it reveals that Goat Cluster Village project is a profitable and successful project which can promote goat farming as an income generating avenue.

Keywords: Goat, cluster village, Southern Province

Evaluation of the impacts of the depreciation of Sri Lanka Rupee against US Dollar on poultry feed industry and per capita consumption of chicken meat and table eggs

B.S.S. Perera*, M.N.M.D.S. Dharmawardane and M. K. C. S. Sampath

Ministry of Agriculture and Plantation Industries, 80/5, Govijana Mandiraya, Rajamalwatte Avenue, Battaramulla, Sri Lanka

*Corresponding author: sanjikaperera@gmail.com

Poultry industry is considered as one of the most important food ventures in the world. The objective of this evaluation is to study the impact of the depreciation of Sri Lankan Rupee against the USD on poultry feed industry and per capita consumption of egg and chicken meat in the period from 2019 to 2023. The data received from the Department of Animal Production and Health and the Annual reports of Central Bank of Sri Lanka on major raw materials, commercial feed prices, cost of production and per capita consumption were evaluated. From the year 2019 to 2021, the value of the USD against the LKR has increased by about 11%, and highly increased by 63% from the year 2021 to 2022 and + 1.2% from 2022 to 2023. Accordingly, the mean prices of SBM (+66.5%), Maize (+9%), MBM (+71.8%), DLM (+38.8%) which are considered as main raw materials have also increased and the same pattern was followed by retail prices of broiler feed (Booster +214%, Starter +222%, Finisher +224%) and layer feed (Starter +177%, Grower 157%, Layer +163%). From 2021 to 2022, the Cost of Production (COP) and retail prices of eggs (COP +119%, Retail +127%) and chicken meat (COP +122%, Retails +63%) has increase drastically. Egg production and chicken production decreased by 5% and 6% present respectively. The per capita consumption of table eggs and chicken meat has decreased by 3% and 29%. It can be observed that the economic recession in Sri Lanka in the last five years has affected the feed industry, poultry industry as well as per capita consumption of table eggs significantly and chicken meat moderately.

Keywords: Poultry industry, commercial feed, cost of production

Variation in coronaviruses detected from right and left nasopharyngeal swabs of cattle

T. Fernando[1], H.A.R. de Zoysa[2], M.N.M. Fouzi[2], B.N. Iqbal[1], S.M.S. Cheng[3], V. Dhanasekaran[3], J.S.M. Peiris[3] and F. Noordeen[1*]

[1]*Department of Microbiology, Faculty of Medicine, University of Peradeniya*
[2]*Department of Farm Animal Production and Health, University of Peradeniya, Sri Lanka*
[3]*School of Public Health, Faculty of Medicine, University of Hong Kong -Pokfulam, Hong Kong*

*Corresponding author: *faseeha.noordeen12@gmail.com*

A commonly known coronavirus (CoV), found in dairy cattle is bovine CoV. It is important to test for bovine CoV for treatment and to prevent economical losses caused by the bovine CoV infection. On the other hand, testing for CoV in animals will also be useful to detect any emerging CoV. The correct method to obtain nasopharyngeal swabs in animals is to swab both right and left nostrils. However, due to the technical and financial difficulties in obtaining swabs from both nostrils in large dairy farms, swabbing in both nostrils is not often done. Sampling for this study was done in the Veterinary Teaching Farm, University of Peradeniya where routine testing for known pathogens is not done. In this study, we aimed to compare the variation in the presence of CoV between right and left nasopharyngeal swabs taken individually from cattle from a farm in the Central Province of Sri Lanka. Sampling was done in October 2022 from cattle in the Veterinary Teaching Farm of the University of Peradeniya. A total of 64 deep guarded nasopharyngeal swabs were obtained separately from right and left nasopharyngeal cavity from 32 cows. Demographically 25female adult dairy cows and 7 dairy calves of both genders were included. Sampling from each nasal cavity was done once. Four swabs (n=4) from two adult cows were discarded due to contamination and thus we had only one swab from these two animals. Each swab was mixed with 3mL of PBS separately and viral RNA was extracted using the Spinstar™ Viral Nucleic Acid Kit (ADT Biotech, Malaysia) as per manufacturer's instructions. RNA extracts were subjected to a PanCoV nested one-step RT-PCR, which is designed to target the RNA-dependent RNA polymerase (RdRp) gene, a 442 base pair fragment from the conserved region in the *Orthocoronavirinae* family. All PCR products were run on a 2% agarose gel to detect the CoV. Overall, of the 60 swabs analyzed, CoV was detected 33% (n=20/60). Forty percent positivity (40%; n=12/30) from the right nasopharyngeal swabs and 50% positivity (n=15/30) from the left nasopharyngeal swabs were noted. Only 17% (n=5/30) of the cows demonstrated CoV in both nostrils by PanCoV RT-PCR. Sequencing of CoV detected are in progress to identify the CoV present in the individual animals. Based on the present data, CoV positivity varies between right and left nasal cavities due to the structural differences between the nostrils in the same cow. From this study a low percentage of cows had CoV positivity in both nasal swabs, hence, it is important to obtain both swabs when testing for CoV in cattle either separately or pooled methods.

Keywords: Animal coronaviruses, nasopharyngeal swabs, cattle

The effect of different chlorine concentration in the chill tank on reducing *Salmonella* and *Campylobacter* in poultry processing

Gayani Weerasooriya*, H.M.T. Dulakshi, P. S de Alwis, D.M.S.N. Dissanayake, M.I. Wijemuni, N. Liyanagunawardane and M.A.R. Priyantha

Veterinary Research Institute, Peradeniya, Sri Lanka

*Corresponding author: *gayaniw13@mail.com*

The persistence of *Salmonella* and *Campylobacter* in poultry meat is a major public health concern. Chlorine is used in the chill tanks to minimize the entry of food-borne pathogens into the food chain via contaminated meat in poultry processing. The effectiveness of chlorine depends on the concentration of chlorine, contact time, and content of organic matter in the chill tank. The objective of this study was to understand the effect of different chlorine concentrations used in poultry processing plants in Sri Lanka to mitigate food-borne pathogens in poultry meat. A survey was conducted in large-scale processing plants in Sri Lanka (n=10) specially focusing on chlorination techniques and concentrations using during processing. Subsequently, post-spin chill whole carcasses (n=150) and neck skin samples (n=100) were collected from the processing chain and conventional bacterial isolation techniques were used to isolate *Salmonella* and *Campylobacter* followed by specific biochemical tests for identification. According to the data obtained, 30% of the processing establishments used liquid chlorine, 60% used liquid sodium hypochlorite, and 10% used other sanitizers in their chill tanks. Further, three different chlorine dosages; 3-5 ppm, 20-30 ppm, and 40-50 ppm were used in the chill tanks. The results revealed that the overall prevalence of *Salmonella* and *Campylobacter* was 78.25%, and 64% respectively. The percentage of *Salmonella*-positive neck skin samples and *Salmonella*-positive whole carcasses were 67% and 87.25% respectively, while *Campylobacter*-positive neck skin and whole carcasses were detected as 60.75% and 68.5% respectively. Interestingly, *Salmonella* and *Campylobacter* positive carcass percentages were high compared to the positive percentages of neck skin samples for *Salmonella* and *Campylobacter*. The lowest positive percentages of carcasses for *Salmonella* and *Campylobacter* were observed at chlorine concentrations of 40-50 ppm. A significantly low ($p<0.001$) *Campylobacter* load in the carcasses was observed at levels of 20-30 ppm (2.8×10^3 CFU/mL) and 40 -50 ppm (1.3×10^3 CFU/mL) of chlorine concentrations. Although the higher chlorine concentration was able to reduce the cross-contamination level, the persistence of sub lethally injured foodborne pathogens in chicken meat could still be a serious public health issue in the future. Therefore, implementation of effective chemical decontamination strategies in chill tanks to reduce carcass contamination of the carcasses during processing is highly important.

Keywords: Salmonella, *Campylobacter*, chlorine, chicken meat

Mapping of poultry related policies in Sri Lanka

Chamari Kannangara[1*], Palika Fernando[2], Doreen Anene[3], Robyn Alders[3, 4] and Ruwani Kalupahana[5]

[1]*Ministry of Agriculture, Sri Lanka*
[2]*Department of Animal Production and Health, Sri Lanka*
[3]*Global Health Programme, Chatham House, London, UK*
[4]*Development Policy Centre, Australian National University, Canberra, Australia*
[5]*Faculty of Veterinary Medicine and Animal Science, University of Peradeniya, Sri Lanka*

*Corresponding author: *chamarikannangara@yahoo.com*

Mapping policies for the poultry industry involves identifying and analyzing acts, regulations, guidelines related to poultry production, processing and distribution. In Sri Lanka, animal industry-related policies play a crucial role in shaping and regulating the poultry industry. They serve as guidelines, rules, and legal frameworks that help ensure the smooth functioning and growth of the sector. Mapping of all the policies and their implementation process provides stakeholders to obtain a comprehensive understanding of the regulatory landscape and work towards promoting the sustainable development of the poultry industry, while ensuring food safety, animal welfare and environmental protection. However, the relevance of these existing rules and regulations towards poultry production practices, disease prevention, control and surveillance and antimicrobial resistance (AMR) has not been previously analyzed and existing gaps were identified. Therefore, this study aims to collect all publicly available acts, policies, circulars, regulations and guidelines currently applicable to the poultry industry and to compile a policy matrix for easy reference. For this exercise, "the actor and the policy mapping tool "adopted by the One Health Poultry Hub and developed by the New Climate Institute (https:// newclimate.org/resources/tools/actor-and-policy-mapping-tool) was used. All the relevant policies across different ministries and international instruments to which Sri Lanka is signatory were collected and entered into the policy mapping tool. This exercise has generated a document with easy access to all laws, regulations, circulars and guidelines for the interested stakeholders. The generated results show more than 25 poultry related polices are present in Sri Lanka and these policies are issued by various government institutes. All most all the legislations in Sri Lanka are not focused on poultry but more general on livestock and food safety. Poultry is not identified as an animal under the Animals Act and no legislations to cover poultry farming practices, poultry slaughter and poultry transport process. The document generated by this exercise identified gaps and inconsistencies in the existing policy framework in Sri Lanka and improvements needed for further development.

Keywords: Livestock, policy mapping, poultry, legislations, Sri Lanka

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Investigating molecular markers influences the haemagglutination activity of the H9N2 avian influenza viruses

Thusitha K. Karunarathna[1,2,3*], Jean-Remy Sadeyen[1], Jiayun Yang[1], Sushant Bhat[1], Pengxiang Chang[1], Joshua E. Sealy[1], Mehnaz Qureshi[1] and Munir Iqbal[1]

[1]*Avian Influenza Group, The Pirbright Institute, Woking GU24 0NF, UK*
[2]*Royal Veterinary College, University of London, Hertfordshire, AL9 7TA, UK*
[3]*Faculty of Veterinary Medicine and Animal Science, University of Peradeniya, Sri Lanka*

[*]Corresponding author: *thusithakarunarathna@gmail.com*

Avian influenza H9N2 viruses are enzootic in poultry in many parts of the globe causing severe losses to poultry production as well as posing risk of zoonotic infections and pandemic emergencies. H9N2 viruses are also very efficient in donating internal gene segments to other Avian Influenza Viruses (AIVs) and this genetic reassortment mechanism has led to the emergence of several highly zoonotic AIVs, including H5N1, H7N9, H10N8, H5N6, and H3N8. Vaccination is a major tool for mitigating disease impacts and the burden of these viruses in the field, nevertheless, the emergence of immune escape variants impedes vaccines' effectiveness. Antigenic drift is mainly due to amino acid substitution in the haemagglutinin (HA) protein, a major antigen in influenza viruses. This study investigates the molecular mechanisms of immune escape mutations that underpin the biological properties of the H9N2 virus, including hemagglutination of chicken erythrocytes, replication fitness in mammalian and avian systems, and stability. The results showed that the immune-escape variant acquired an amino acid substitution, replacing glycine (G) with glutamic acid (E) at position 149 in the H9HA protein. This substitution resulted in (i) a complete loss of activity to agglutinate chicken erythrocytes, (ii) a tenfold increase in replication fitness, and (iii) a twofold reduction in antigenic cross-reactivity compared to the parental wild-type virus. Furthermore, the mechanism of loss of haemagglutination activity by the immune escape mutants was elucidated. The results suggest that the change in polarity of amino acids from positive charge to negative charge directly influences the virus haemagglutination activity. In addition, residues at positions 215, 216, and 217 (H9 numbering) in the 220-loop of H9HA also contribute to modulating the haemagglutination activity of H9N2 viruses. Overall, the study concludes that G149E immune-escape variants in H9N2 AIVs could rise in nature having the ability to overcome vaccine-induced immunity which cannot be detected via haemagglutination assays. Thus, compromising the surveillance programmes along with assessment of their antigenic cross-reactivity via haemagglutination inhibitions assays. Therefore, this immune escape variant can continue to circulate undetected posing huge public health risk.

Keywords: Influenza, immune escape mutants, haemagglutinin, haemagglutination

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Prevalence of poultry food-borne pathogens in the wet markets and poultry processing plants in Sri Lanka

Gayani weerasooriya[1*], M.A.R. Priyantha[1], Fiona Tomley[2], Damer Blake[2], Guillaume Fournie[2,3], Nilukshi Liyanagunawardena[1], P.S. Fernando[4], P. S de Alwis[1], Sandun Bandara[1], K.R.P.S. Premarathne[1], H.M.M. Thilakshika[5], P.A. Udeshika Sewwandi[5], Hemal Rasanjana Peiris[5] and Ruwani Kalupahana[5]

[1]*Veterinary Research Institute, Sri Lanka*
[2]*Royal Veterinary College, UK*
[3]*National Research Institute for Agriculture, Food and the Environment (INRAE), France*
[4]*Department of Animal Production and Health, Sri Lanka*
[5]*University of Peradeniya, Sri Lanka*

*Corresponding author: *gayaniw13@gmail.com*

Poultry meat is the most common source of animal protein for human consumption in Sri Lanka, due to its low cost and easy availability. Food-borne pathogens such as non-typhoid *Salmonella* and *Campylobacter* are a major concern in the poultry industry due to their association with gastroenteritis in humans. Poultry meat processing in Sri Lanka has advanced drastically during the last few decades, developing into an industry. Nevertheless, the contribution of the wet market to local poultry meat production is considerable. Therefore, it is very important to understand the prevalence of *Salmonella* and *Campylobacter* in both the large-scale poultry processing plants and the wet market in Sri Lanka. In total, 54 environmental samples; pool faecal sample (n=1) from the crates of each flock and 108 caecal samples were collected from 24 broiler flocks (n=48 birds) at the point of slaughter in large-scale processing plants and from 30 broiler farms (n=60 birds) in wet markets in the Western and North Western provinces. Conventional microbiological isolations were conducted followed by specific biochemical tests to identify *Salmonella* and *Campylobacter*. The overall prevalence of *Salmonella* and *Campylobacter* was 64.8% and 56.75% respectively. The prevalence of *Salmonella* did not vary according to site type (wet markets: 66.6%, large-scale processing plants: 62.5%), whereas the prevalence of *Campylobacter* was higher in wet markets (74.4%) than in large-scale processing plants (34.7%). A significantly high ($p<0.05$) prevalence of *Campylobacter* was detected in environmental samples (85% vs 8.33%), and a higher prevalence in caecal (53.3% vs 47.9%) samples in wet markets compared to large-scale processing plants. Out of the recovered *Campylobacter* isolates 44% were identified as *Campylobacter jejuni* in large-scale processing plants, while it was 2.15% in the wet market. The high prevalence of *Salmonella* and *Campylobacter* detected in the present study highlighted the possibility of food-borne pathogens entering the food chain via contaminated poultry meat. Therefore, the implementation of a national food-borne surveillance program followed by the introduction of Good Management Practices (GMP) in the wet market is crucial to minimize the public health risk.

Keywords: Processing plants, wet market, *Campylobacter*, *Salmonella*

Immunogenic Response to selected anti-rabies vaccines in field dogs in Sri Lanka

Hasanthi Rathnadiwakara[1*], Florence Cliquet[2], Marine Wasniewski[2], Jean-Christophe Thibault[3], Mohamed Ijas[4] and Mangala Gunatilake[1]

[1]Dept. of Physiology, Faculty of Medicine, University of Colombo
[2]EU/WOAH/WHO Reference Laboratory for Rabies, OMCL for rabies vaccines, ANSES-Nancy, France
[3]JC&P Life Science Partners, Forcalquier, France
[4]Municipal Veterinary Department, Colombo Municipal Council, Sri Lanka

*Corresponding author: *hasanthirathnadiwakara.pdn@gmail.com*

Vaccinating dogs against rabies plays a crucial role in controlling rabies. For effective control of the disease, anti-rabies vaccines (ARV) should be safe, and effective, with required potency. Several brands of commercial animal ARV are marketed in Sri Lanka, yet the comparison of efficacy/potency has never been tested at the local level. Identifying vaccines with proven efficacy would be vital for effective rabies control. This study was conducted to determine the immunogenicity of selected ARVs in field dogs after vaccination and to assess the reliability of ELISA as a screening serological test. Before this field study, the potency of all available ARVs was tested. Based on the results, three ARVs with the highest potency (Rabisin®-12IU/dose, Raksharab® single-dose- 7.2IU/dose, Nobivac® Rabies-3.4IU/dose) and one ARV which had been used during previous government vaccination programs (Raksharab® multidose) have been selected. The immunogenicity of these four ARVs in dogs was assessed using two serological methods, i.e., Fluorescent Antibody Virus Neutralization (FAVN) test and BioPro® rabies ELISA. This work was conducted with the ethical approval of the Faculty of Medicine, University of Colombo (EC-16-050). A total of 116 seronegative clinically healthy dogs with good body condition scores were recruited for three different age groups (puppies/n=39, juveniles/n=42, and adults/n=35) from western and central provinces. Each dog was vaccinated once with one of the four vaccines subcutaneously. First blood sample was collected at D0, pre-vaccination, and second sample was collected at D30 post-vaccination. Based on the seroconversion on D30 (RVNA titre >0.5IU/mL), there was no significant difference in antibody levels in dogs, irrespective of the age groups. There was a statistically significant difference between the vaccine groups where Nobivac® Rabies induced significantly lower antibody levels than the other three equal vaccines. The specificity of ELISA in detecting naive samples was 94.83%. The coefficient of concordance between the two tests was 72.41%. The study reinforces the fact that despite the age differences, all dogs should be vaccinated during the vaccination campaign, including puppies. This study suggested that vaccines with adequate potency induce good seroconversion in dogs. Furthermore, we demonstrated that Biopro® rabies ELISA can be a reliable screening test to assess the efficacy of dog vaccination programs.

Keywords: Anti-rabies vaccine, dogs, FAVN test, ELISA, efficacy

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Knowledge and perception of toxoplasmosis among pregnant women attending two antenatal clinics in Kandy District, Sri Lanka: facility based cross sectional survey

P.C. Ubhayasiri* and N.P. Kaluarachchi

Postgraduate Institute of Science, University of Peradeniya, Peradeniya, Sri Lanka

Corresponding author: pumudithaubhayasiri@gmail.com*

Toxoplasmosis, caused by *Toxoplasma gondii* is a public health concern, which causes devastating effects on the human fetus during pregnancy. Research on Toxoplasmosis awareness among pregnant women in Sri Lanka is sparse, leading to insufficient adoption of preventive behaviours. The objective of this study was to assess the factors associated with knowledge and perception of Toxoplasmosis among pregnant women attending antenatal clinics in Kandy District. A facility based cross sectional survey was conducted from 15th March to 28th April 2024 at two antenatal clinics (Asgiriya and Mahaiyawa) in Kandy District. In total, sixty pregnant women were selected by convenience sampling and data were collected using a structured questionnaire. Sociodemographic characteristics (age, parity, pregnancy trimester, education, and occupation) were analyzed by descriptive statistics and the Chi-square test was used to assess the factors associated with knowledge of Toxoplasmosis. Participants were within 21-25, 26-30, 31-35 and 36-40 age groups. Of them, 35% were in the second trimester and 25% were in the third trimester of pregnancy. The majority (80%) of the participants had poor knowledge, 16.7% had moderate knowledge and 3.3% had good knowledge of Toxoplasmosis. The association between the level of knowledge and their age was not significant (P=0.121). There was a significant association between the parity of participants and their level of knowledge. (P=0.010). Exactly, 93.6% of the participants with secondary education had poor knowledge while 61.5% with higher education had moderate knowledge regarding Toxoplasmosis. The association between the educational level of participants and their level of knowledge was significant. (P=0.00). The association between the occupation and the level of knowledge was significant (P=0.00). There was a significant association between previous history of miscarriages and the level of knowledge (P=0.004). Results of the study revealed that the parity, educational level, occupation, and previous history of miscarriages were significantly associated (P<0.05) with the level of knowledge regarding Toxoplasmosis. In conclusion, there is a knowledge gap about the zoonotic importance of Toxoplasmosis among pregnant women in the two selected areas in Kandy District. Therefore, conducting health awareness programmes for pregnant women in Kandy District is suggested to enhance fetal health during pregnancy.

Keywords: Toxoplasmosis, *Toxoplasma gondii,* knowledge, pregnancy, zoonotic

Epidemiological overview of reported cases of highly pathogenic avian influenza (HPAI) A (H5N1) virus in South Asia and its impact to the poultry industry in Sri Lanka

K.M.S.M.K. Senavirathne*, P.C. Ubhayasiri and N.P. Kaluarachchi

Postgraduate Institute of Science, University of Peradeniya, Sri Lanka

**Corresponding author: shashi92114@gmail.com*

Avian Influenza (AI) type A viruses are divided into subtypes based on two proteins on the surface of the virus: Hemagglutinin (HA) Neuraminidase (NA). In birds, 16 HA and 9 NA subtypes are identified and based on the pathogenicity, further classified as Highly pathogenic Avian Influenza (HPAI) A viruses and Low Pathogenic Avian Influenza (LPAI) A viruses. LPAI viruses cause either no signs of disease or mild disease in poultry while HPAI cause severe disease and high mortality in infected poultry. In year 2011, the United Nations Food and Agriculture Organization (FAO) named countries such as Bangladesh, China, Egypt, India, Indonesia, and Vietnam, endemic for Asian HPAI/ H5N1 subtype in poultry. The current study is based on the epidemiological data from the Global Animal Disease Information System of FAO on reported HPAI/ H5N1 cases in the South Asian region. The objective of this study is to assess and identify the risk factors towards the poultry industry in Sri Lanka. The data included 33 confirmed cases of HPAI /H5N1 subtype in countries of the South Asian region from January 2023 to April 2024. 7 (21%) cases were from domestic chicken. Out of them, 6 cases were from Napal, and one case was from India. 26 (78%) reported cases were from unspecified domestic avian species. Among them, 16 cases were reported from India, 9 cases from Napal and one case from Bhutan. Cases from these countries pose a significant risk to Sri Lanka especially, India where majority of the total confirmed cases (51%) were reported. This study highlights the fact that Sri Lanka needs to closely monitor for any signs of HPAI outbreaks in the neighbouring countries and implement strong biosecurity measures to prevent the spread of the virus as the virus can come to Sri Lanka due to various factors such as close proximity, migratory patterns of wild birds and recent trade connections like importation of chicken eggs. Additionally, enhancing surveillance and ensuring prompt reporting of any suspicious cases are essential steps to mitigate the risk to Sri Lanka's poultry industry and public health.

Keywords: Influenza A virus, highly pathogenic avian influenza (HPAI), H5N1 subtype poultry industry

Evaluating the impact of the community-based leadership approach on bovine FMD vaccination coverage in Sri Lanka's Dry Zone

K.H. Wellappili*, Ha Thu Vu and Daisaku Goto

International Economic Development Program, Graduate School of Humanities and Social Sciences, Hiroshima University, 1-5-1 Kagamiyama, Higashi-Hiroshima City, Hiroshima, 739-8529 Japan

*Corresponding author: *khwellappili@yahoo.com*

Foot and Mouth Disease (FMD) poses a global threat to the livelihoods of rural cattle and buffalo farmers in developing countries, as it is an economically significant viral disease. In these regions, FMD can be controlled cost-effectively through proper vaccination. However, despite ongoing efforts, current FMD vaccination coverage in Sri Lanka remains inadequate, leaving the bovine population vulnerable to epidemics. The main reasons for this include a lack of human resources, inadequate infrastructure in veterinary offices, and farmers' limited knowledge of the importance of vaccination. Community participation in animal vaccination and other health care activities has been evaluated in some countries, mostly in Africa, focusing primarily on poultry vaccination. There are very few studies conducted in Asia, particularly South Asia. The Community-Based Leadership Approach (CBLA), which involves using prominent members of the cattle and buffalo farming community as vaccinators based on village leaders' recommendations, has not yet been evaluated. We examined the impact of CBLA on bovine FMD vaccination coverage using a Randomized Controlled Trial (RCT) in the Uhana veterinary range of Sri Lanka's dry zone. From a population of 55 villages, we randomly sampled 30 and conducted a baseline survey of bovine farmers. Using stratified random treatment, we selected 15 treatment- and 15 control-villages. Each treatment village had one CBLA farmer and one Government Paid Officer (GPO) as vaccinators, while control villages had two GPOs as vaccinators. RCT data were analyzed using Ordinary Least Squares (OLS) regression with robust cluster standard errors, and we found that CBLA increases the total vaccination ratio by approximately 30.3% points, which equals a 105.7% increase.

Keywords: Community-based leadership approach, bovine, FMD vaccination coverage, Dry Zone

Prevalence of clinical mastitis in North Central province

R.M.C. Rajapaksha[1*], M.G.N. Keerthi[2] and K.M.U.M. Amarasinghe[3]

[1]*Provincial Director's Office, Department of Animal Production and Health, North Central Province, Anuradhapura*
[2] *Deputy Director's office, Department of Animal Production and Health, North Central Province, Anuradhapura*
[3] *Ministry of Agriculture and Plantation, Govijana mandiraya ,Bathtaramulla, Sri Lanka*

*Corresponding author: *chandaniraja@yahoo.com*

Bovine Mastitis is one of the most economically significant diseases of dairy cows, negatively affecting farm economic return, and individual cow and herd performance. Mastitis is an inflammation of the mammary tissue caused by many pathogens, bacteria, virus and fungi; however, the most common cause is bacteria. It not only affects udder tissue, but also quantity and quality of the milk. Production loss due to mastitis in Sri Lankan dairy industry is not estimated recently but it should be at a considerable level. This retrospective study investigates prevalence of clinical mastitis in North Central Province (NCP) for 2022, 2023 and the seasonality behavior of the disease. Data were collected from monthly disease reporting format in 2022 and 2023 from all (29) government Veterinary Surgeon's Divisions (VSD) of NCP. Clinical cases have been identified only by using clinical signs manifested by secretion of abnormal milk like watery, with flakes, with blood or other different colours, bad odor, swelling and redness of the udder. Analysis of data shows the prevalence of clinical mastitis 1,878/147,302 (1.27%) and 2,080/142,611 (1.46%) in NCP in 2022 ,2023 respectively. In the span of a year, clinical mastitis prevalence increased by 0.2% in the province. Highest prevalence of clinical mastitis was identified in 3rd quarter of both the years positively correlating with highest milk production is also in 3rd quarter of the year in 2022 and 2023. VSD Thambuthtegama 85/1055 (8.05%) from Anuradhapura District and VSD Bakamoona 52/1428 (3.6%) from Plonnaruwa District were identified as divisions with the highest prevelence of clinical mastitis in NCP. Geographically, both divisions are in the Mahaweli Development Authority. Both divisions are increasing in urbanization, where dairy production practices are done on a small scale with a semi-intensive management system. Cows are contained in a limited area without proper shelter and hygiene. Production of milk per cow is highest in VSD Thambuthegama with 2.6 milk liters per day and VSD Bakamoona with 1.6 liters per day. They are the causative risk factors that lead to the highest prevalence of clinical Mastitis in these divisions. These findings are valuable in implementing control measures to minimize the economic losses caused by clinical mastitis in NCP in the future. By improving proper hygienic measures in cattle sheds, clinical mastitis cases can be minimized. Further research studies are needed to identify the most relevant risk factors affecting the yearly rise of clinical mastitis.

Keywords: Milk, seasonality, bovine, clinical mastitis

A case of successful management of gastric dilation and volvulus in a dog

S.U. Samarasinghe*, B.M.M.W. Manchanayake, D.R.K. Perera and B.I.U. Perera

Vets and Pets Animal Hospital, Palawatte, Sri Lanka

*Corresponding author: *umeshass95@gmail.com*

Gastric dilation and volvulus (GDV) in dogs are an abnormal accumulation of gastric gas and subsequent rotation of stomach on its mesenteric axis. This is a life–threatening emergency, primarily affects large and deep chested dog breeds with a mortality rate up to 20% - 45% even in treated animals. Predisposing factors include exercise and stress after a large meal, once–daily feeding, rapid eating, eating from a raised bowl and fearful temperament. This condition has effects on cardiovascular, respiratory, gastrointestinal, haemopoietic, metabolic, renal and central nervous systems. Prompt and accurate diagnosis is required for successful outcome and to prevent recurrence. A 4–year–old, 54kg, intact male Bullmastiff–American Bully crossbreed dog referred to Vets and Pets Animal Hospital with the clinical signs of restlessness, ineffective vomiting attempts, salivation, pale gums, inability to stand–up, enlarged abdomen and tachycardia. Due to restlessness, sedation with midazolam (0.2 mg/kg) and maintenance with propofol CRI were required and analgesia was provided with tramadol (3 mg/kg, IV). Intravenous crystalloid bolus (20 ml/kg BW) was administered, and oxygen was provided by a mask. After initial medical stabilization radiography was performed and it showed typical "reverse C sign'. Thus, based on history, clinical signs, physical examination and radiography, GDV was diagnosed. Percutaneous gastrocentesis was performed to relieve the gastric distension using 18G needle trocarisation as orogastric intubation was unsuccessful. Once complete fluid resuscitation and gastric decompression were achieved, the patient was anesthetized. Analgesia and antibiotics (cefuroxime 20mg/kg) were administered. A ventral midline celiotomy was performed, volvulus was corrected, and stomach was repositioned to its normal position. Abdominal viscera including spleen and stomach were checked for ischemic lesions. An incisional gastropexy was performed by suturing the seromuscular layer of the gastric wall to the right transverse muscle of the abdomen and ventral midline incision was closed. The patient was hospitalized for four days, received antibiotics, analgesia and other supportive for one week. Blood pressure, urine output and ECG were monitored to manage potential hypotension, acute kidney injury and cardiac arrythmias. Follow-ups were conducted every three days until the suture line healed. Patient was fully recovered, demonstrating that prompt medical and surgical intervention can effectively treat GDV in dogs.

Keywords: GDV, gastric decompression, gastropexy

Predictive modeling of bovine Babesiosis occurrence in Sri Lanka

S.S. Iddamaldeniya[1*], I.A. Jayawickrama[2], K.W. K. Premachandra[3], N.D.S. Dissanayake[1], P.G.I.D. Amarasiri[1], H.R.J.K. Kularathne[2], Hemanthini Athapaththu[1], M. Arthic[1], K.H. Kodikara[1] and Wasana Sugandhi[1]

[1]*Veterinary Research Institute, Gannoruwa, Peradeniya*
[2]*Department of Animal Production and Health, Getambe, Peradeniya*
[3]*Creative Software, 413, R.A.De Mel Wamatha, Colombo 08, Sri Lanka*

*Corresponding author: *samanthaidd@gmail.com*

Bovine babesiosis is a significant haemo-protozoan disease affecting cattle in Sri Lanka, leading to substantial economic losses. Despite various control measures, including vaccination and tick control, the prevalence of the disease remains high in the country. According to the Department of Animal Production and Health (DAPH), there is an average of 4744 *Babesia* cases and 115 deaths annually. Therefore, trend analysis and forecasting are crucial for preparing and mitigating future disease occurrences. Between 2017 and 2023, babesia cases reported to the DAPH were analyzed along with seventeen other potential risk factors to develop a predictive model for babesiosis in Sri Lanka. The average *Babesi*a cases over seven years for each district was used as the dependent variable. Independent variables included minimum, maximum, and average temperatures, average rainfall, sunshine hours, altitude, forest cover, cattle and buffalo population, animal abundance, vaccination numbers, percentages of intensive, semi-intensive, and extensive management farms, and percentages of Indian, European, and local animal breeds in each district. Initially linear regression analysis was used to develop the model but it proved to be less fitting. Therefore, Generalized Estimating Equations (GEE) model was used to predict the occurrence of Bovine Babesiosis in various districts. The main objective was to identify significant predictors and their interactions that influence the occurrence of the disease, thereby providing actionable insights for better disease management. Initial exploratory analysis highlighted several highly correlated predictors, necessitating a stepwise approach to model development to address multicollinearity and ensure model stability. The model development process began with identifying significant predictors from the dataset. Using the GEE method, initially all potential predictors and their interaction terms were included. However, this led to convergence issues and overfitting, as evidenced by warnings during the model fitting process and perfect predictions on the training data. Subsequently the model was simplified by retaining only the most significant predictors and a reduced set of interaction terms, whichincluded`Minimumtem:Sunshinehrs`,`Minimumtem:Forestcover`,`Minimumtem:Vaccination` `Sunshinehrs:Forestcover`, `Sunshinehrs: Vaccination` and `Forestcover:Vaccination`. The final model demonstrated that Sunshine hrs, Vaccination, Cattle population, and Europian breed were significant predictors of Babe_23, the target variable. The interaction terms `Minimumtem:Vaccination` and `Sunshinehrs:Vaccination` were also significant, indicating that these combined effects play a crucial role in average disease occurrence. The model achieved an R-squared value of 0.837 and a Mean Squared Error (MSE) of 8464.282, suggesting good predictive performance. Following assumptions were utilized in development of this model: Independence of observations, linearity, no Perfect multicollinearity, and homogeneity of variance. To improve the model following recommendation are given: Regular data updates, incorporate spatial effects, enhance predictor variables, collect and integrate more data on cattle movement, tick infestations, and localized climate changes, model validation using external datasets to ensure its generalizability and robustness across different regions.

Keywords: Bovine Babesiosis, predictive modelling, Generalized Estimating Equations (GEE)

Immune responses to Newcastle Disease vaccination in parent village chicken and their F1 generation in Sri Lanka

A.W. Kalupahana[1*], H.A.S. Satharasinghe[2], K.K. Sarath[2] and N.M.T. Anupama[1]

[1]*Department of Veterinary Pathobiology, Faculty of Veterinary Medicine and Animal Science, University of Peradeniya, Peradeniya*
[2]*Department of Animal Production and Health (Western Province), Welisara, Sri Lanka*

*Corresponding author: *anilwkalupahana@yahoo.com*

Village chicken production is practiced in Sri Lanka to provide daily protein requirements and economic revenue to farmer families. Newcastle disease (ND) is an economically important disease in the country. Therefore, routine vaccination is carried out. However, the seroconversion of the vaccine has not been documented in local village chicken populations. The objective of this study was to evaluate immune response for routine ND vaccination in village chicken breeder parents and antibody transfer to their progeny day old chicks (DOC). Sixty village chicken DOC were randomly assigned to vaccinated and control groups (30 each) and housed separately in the same environment. Both groups received all other routine vaccines as scheduled except the ND vaccine for the control group. Vaccinated group received oral ND vaccines (produced by VRI) at 3 (primary), 7 (first booster), and at 12 (second booster) weeks of age. The blood samples were collected from both groups at 3, 5, 7 , 9, 12, 20, 30, and 45 weeks of age. The first laid eggs of both groups were hatched, and the heart blood was collected from DOCs. A commercial ND Antibody ELISA kit was used to evaluate the ND specific IgG titres. At 3 weeks of age both groups showed similar ND antibody titres without any statistically significant difference. After the first booster vaccination, there was a statistically significant increase in the ND antibody titres in the vaccinated chickens compared to the controls. However, the protective antibody titre of 1159 was achieved only 2 weeks after the first booster vaccination. After the second booster vaccination, vaccinated group demonstrated 12-14 times higher, statistically significant increase in the protective ND antibody titres compared to the controls. F1 generation of vaccinated chicken demonstrated 7 times higher protective ND antibody titres compared to the unvaccinated F1 generation. Mann-Whitney U test confirmed that the vaccinated group had statistically significantly different higher ND antibody titres in comparison to the age matched control groups. This study demonstrated that the current ND vaccination schedule is capable of generating high ND antibody titres in the parents giving possible protection against the disease and also successfully transferring ND antibodies to the F1 generation. This trial carried out under highly controlled environment hardly mimicking the field conditions of disease exposure is a drawback of this study.

Keywords: Newcastle disease, ND antibody titre, Village chicken, ND vaccination, F1 generation

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Identification of Infectious Bronchitis virus using Trypsin treated hemagglutination assay

W.M.A.D. Wanninayaka*, S. Puvanendiran and H. Kothalawala

Animal Virus Laboratory, Veterinary Research Institute, Gannoruwa, Sri Lanka

Corresponding author: anushika_a@yahoo.com*

Avian Infectious Bronchitis (IB) is an acute highly contagious disease of poultry caused by a *Coronavirus,* a partially hemagglutinating virus. Several studies were carried out to make Infectious Bronchitis virus to hemagglutinate to facilitate diagnostic procedures and virus quantification. The present study was conducted to standardize the Trypsin treated Hemagglutination Assay (THA) to detect IBV by treating Allantoic fluid (AF) with trypsin and compare with Polymerase Chain Reaction (PCR) and changes in the embryo after inoculated into chicken emberyos. 40 samples were collected from 20 different IB suspected poultry farms (two samples per farm) in Northwestern Province of Sri Lanka. Samples were processed and inoculated into embryonated chicken eggs and AF was harvested for further studies. Known IBV was used as a positive control. Treatment with different percentages of trypsin such as 0.25, 0.5, 1.0 and 2.0 at 37°C for 15min, 30min and 3 hours at pH 7.2 was carried out. The reaction was ended-up by keeping the reaction plate at 4°C for 5minutes. Then AF-enzyme mixture was subjected to hemagglutination test (HA). The trypsinized AF with the presence of IBV was identified by clear and consistent agglutination of chicken red blood cells within 5min of incubation at 37°C. Newcastle disease virus and Fowl pox virus were used as controls. HÀ reactions were not observed with 0% and 0.25% of trypsinization. The AF samples treated with 0.5% and 1% trypsin showed 57.1% and 71.4% hemagglutination respectively.AF treated with 1.0% trypsin elicited the 100% HA activity in 3.0 hours whereas 2.0% trypsin elicited the HA activity after 30 minutes. Conventional RT-PCR was carried out to target S gene of IBV and used as a standard test to compare THA. Nineteen samples were tested by PCR and 18 samples were positive. Among eighteen samples, 89.47% were positive by THA and only 68.42% were positive by gross pathological lesions of embryo. The study shows that THA assay is accurate, simple and economical. Clear HA activity was obtained with 2% trypsin after 30min at 37°C. This will facilitate differential diagnosis of major respiratory infections to quantify virus during vaccine production.

Keywords: Infectious Bronchitis Virus, trypsin treated hemagglutination, allantoic fluid

A rare case of a small cell carcinoma in a bull

S. A. S. Indunika[1], N. M. Aberathne[1], M. Kodituwakku[2], W. R. Jayaweera[1], T. A. Gunawardana[1] and R. R. M. K. K. Wijesundera[1*]

[1]*Department of Veterinary Pathobiology, Faculty of Veterinary Medicine and Animal Science, University of Peradeniya*
[2]*Municipal Council, Kandy, Sri Lanka*

*Corresponding author: *kavindra77@gmail.com*

In bovids, primary lung tumors are extremely rare. Adenocarcinoma and pulmonary blastoma are the commonly reported lung tumors in bovids. Small cell carcinoma is a rare type of tumor originated from the neuroendocrine cells in the airway epithelium. Small cell carcinomas are very common in humans. However, it is extremely rare in domestic animals. This case describes the gross and histopathological features of a rare small cell carcinoma in a bull. A bovid lung was submitted to the Division of Veterinary Pathology, Department of Veterinary Pathobiology, Faculty of Veterinary Medicine and Animal Science, University of Peradeniya from the Meat Inspection Site of Kandy municipal Council. Multifocal, firm, round, clearly demarcated, variable sized (approx. 1-3 cm in diameter), grey color nodules were observed in this lung tissue. The nodules present at the periphery of the lung were slightly raised from the surface. Tissue samples from these nodules together with the surrounding apparently normal lung tissue were taken and fixed in 10% neutral buffered formalin. Formalin-fixed tissues were processed routinely, wax embedded and sectioned at 3µm. Sections were stained with hematoxylin and eosin and examined under a light microscope. Histopathology revealed multifocal round, clearly demarcated masses of neoplastic cells within the lung parenchyma and atelectasis of surrounding alveoli. Small round to oval polymorphic, but slightly uniform neoplastic cells with moderated amount of cytoplasm were observed in the tumor mass. Neoplastic cells were arranged as a sheet and cell aggregates were separated by thin fibrous stroma. Moderate to high mitotic figures were observed (>10 per 10 HPF). Gross and histopathological findings are highly suggestive of a small cell carcinoma. Immunohistochemistry is needed to further confirm the origin of the tumor cells. Although rare, small cell carcinomas should be included in the differential diagnosis of lung diseases in bovids.

Keywords: Bovids, histopathology, neoplastic cells, small cell carcinoma

Phase 2 (field trial) of the development of an irradiated vaccine seed for bovine *Babesia bigemina* infection in Sri Lanka

S.S. Iddamaldeniya[1*], Iromy Amarasiri[1], N.D.S. Dissanayake[1], Hemanthi Atapattu[1], M. Aathiq[1], K.H. Kodikara[1], Wasana Sugandi[1], N.M.T. Anupama[2], K. Nizanantha[2], W.M.C. Dhananjaya[2], K. Thananjayan[3], Viraj Perera[4], M. Thusithran[2], J.J. Wesley[2], J.W.Y. Senevirathne[2] and R.P.V.J. Rajapakse[2]

[1]*Veterinary Research Institute, Gannoruwa, Peradeniya*
[2]*Faculty of Veterinary Medicine and Animal Science, Peradeniya*
[3]*Ambewela Livestock (pvt) Ltd, Nuwara Eliya*
[4]*Watawala Plantations PLC, Office Complex No: 754/5, Kandy Road, Wedamulla, Kelaniya, Sri Lanka*

**Corresponding author: samanthaidd@gmail.com*

Babesia bigemina, a bovine tick-borne haemoparasite in Sri Lanka, causes tick fever in cattle, leading to significant economic losses. An irradiated vaccine was developed in VRI to control the disease, and clinical trials showed significant results in vaccine safety, efficacy, and potency using calves (n=20, non-grazing, between 6 -9 months, all female, divided into three groups of five each, challenged with a heterologous *B.bigemina* field strain 28 days after vaccination). The second phase, a field trial, was conducted at two commercial farms in Nuwara Eliya to determine the vaccine's protective level.The study used the best-performing irradiated dose (350 Gy) from previous trials. One hundred, six to eight-month-old unvaccinated calves, housed in a shed and not exposed to pasture, were selected. These calves were sampled to test for haemoparasites (by thin smears) and to analyze baseline humoral (by serum antibody) and cellular immunity (by CD4/CD8 counts) components for Babesiosis. All calves were vaccinated with the pre-tested irradiated *Babesia bigemina* vaccine and observed for adverse reactions for 24 hours. Two weeks post-vaccination, the calves were sent for grazing to a known tick infested pastureland and sampled monthly for six months to monitor humoral and cellular immunity components. The calves showed no adverse reactions to the vaccine and remained clinically healthy after exposure to tick-infested pastureland. Regular blood smears showed no *Babesia bigemina* or *Babesia bovis* (*B.bovis*) infections. Both CD4 and CD8 counts showed statistically significant differences from baseline data ($P<0.05$) initially. However, CD4 counts declined after three months, ceasing to be significantly different ($P>0.05$). CD8 counts remained significantly different from baseline ($P<0.05$) until the last sampling at six months. This result clearly shows the cellular response to antigen exposure as CD4 counts returning to baseline after an initial increase is expected as the acute immune response wanes, whereas CD8 counts remain elevated as part of a memory response, ready to respond to future encounters with the pathogen. Species-specific antibody detection will be done presently. The calves, now in the heifer stage, have been grazing for six months without any clinical Babesiosis episodes, which leads to the assumption that the vaccine may be cross protective for *B.bovis* too. Based on clinical observations and cellular immunity data, it can be concluded that the irradiated vaccine provides sufficient protection against *Babesia bigemina* infection but have to complete the humoral antibody analysis to come to a definitive conclusion. Further studies are needed to confirm the cross protection to *B.bovis*.

Keywords: Babesia bigemina, irradiated vaccine seed, humoral antibody

Insight into corneal ulcers in dogs in Sri Lanka: A retrospective study

Naduni Nuwanshika[1], Eranda Rajapaksha[1], Harsha Ariyarathna[2], Niranjala de Silva[2*], Suranji Wijekoon[3], Claudia Hartley[4], Nayana Wijayawardhane[2]

[1]Rover Veterinary Hospital, Battaramulla, Sri Lanka
[2]Department of Veterinary Clinical Sciences, Faculty of Veterinary Medicine and Animal Science, University of Peradeniya, Sri Lanka
[3]Department of Orthopedic Surgery, UConn Health, Connecticut, USA
[4]Hospital for small animals, The Royal (Dick) School of Veterinary Studies, University of Edinburgh, Edinburgh, UK

[*]Corresponding author: *niranjala.desilva@gmail.com*

Corneal ulcers (CU) are frequently reported as a common eye condition in dogs. Understanding the causative and predilection factors is important for prevention and treatment. A retrospective study investigated the occurrence and causes of CU in different breeds, age, gender, affected eye, ulcer location and environmental/seasonal variations. This was carried out from August 2021 to July 2023 at the Rover Veterinary Hospital, Battaramulla, Sri Lanka. Ocular problems were detected in 193 (2.53%) dogs out of 7603 dogs presented. Dogs with ocular issues were subjected to a complete ophthalmic examination. As many dogs had more than one ocular issue, a total of 300 conditions were diagnosed in these 193 dogs. The most common ocular condition was CU, accounting for 19.68% (n=38). The dogs aged 1 month to 5 years showed the highest occurrence (71.1%) of CU, with males having a higher percentage (60.5%) probably due to their elevated activity levels and curiosity. The highest number (n=13; 34.2%) was in Shih Tzu followed by Pug and crossbreeds (n=8), (21.1%) in each. The right eye was more commonly affected (47.4%) compared to the left (34.2%) and bilateral presentation was evident in 7 (18.4%) dogs. Idiopathic ulcers (24.4%) and possible dog/cat fights (17.8%) were the primary causative factors. Development of CU secondary to Keratoconjunctivitis sicca (13.3%) was a significant finding. Superficial ulcers were common in non-brachycephalic breeds, while brachycephalics had a higher occurrence of descemetocele. Centrally located ulcers were the most common (73.3%) followed by ventro-nasal (13.3%) and ventro-temporal ones (6.7%). There was a significant association between CU and brachycephalic breeds (p=0.00053, chi-square statistics=11.98). These brachycephalic breeds, characterized by their flattened facial structure with bulging eyes, predispose them to CU. There is no statistically significant association between gender or age and the occurrence of CU. Although a higher number of ocular conditions including CU were encountered in May during the 2-year study period, a correlation with definite environmental or other factors could not be ascertained as a cause for this finding.

Keywords: Corneal ulcers, ophthalmic conditions, brachycephalic breeds, Sri Lanka

Evaluation of causes of hospitalization in monkeys in Western Province, Sri Lanka during a four-month time period

P. Dewasurendra[1*], B. D. S. Jayawardana[2], A. Dangolla[2] and K. B. Ranawana[3]

[1]*Department of Wildlife Conservation, Colombo*
[2]*Faculty of Veterinary Medicine and Animal Science, University of Peradeniya, Peradeniya*
[3]*Faculty of Science, University of Peradeniya, Peradeniya, Sri Lanka*

*Corresponding author: *pdevasurendra@gmail.com*

There are three species of monkeys in Sri Lanka, namely, gray langur (GL), purple-faced leaf monkey (PFL) and toque macaque (TM). Among them PFL and TM are endemic to the country and their conservation is managed by the Department of Wildlife Conservation. PFL is confined mostly to the wet zone and orphan and wounded monkeys are reported to the Western Wildlife Health Management Unit (WWHU), Attidiya continuously. PFL are endangered animal species, and their conservation is highly important. Most of the reported cases ended with loss of their lives due to severe injuries, critically affecting the population size. The objective of this study was to analyze the causes of casualties and orphans among the monkey population in Western Province, Sri Lanka. All the monkeys reported to the WWHU from September 2023 to December 2023 were recorded according to the age, sex, place of record, cause of casuality, dead or alive etc., during time of report. Data were entered to a Microsoft Excel sheet and analyzed and expressed as proportions and percentages. Altogether 140 monkeys were reported for four months and out of them 131 were PFLs and only nine were TMs. None were reported from the GLs. On average, 35 incidents per month were reported. Based on the sex ratio, 57% (80/140) were males and 55% (77/140) were adults, 13% (18/140) were sub-adults, 22% (31/140) were juveniles and 10% (14/140) were infants. While 34% (48/140) were due to electrocution, 15% (21/140) were troop mate attacks and 13% (18/140) were due to road traffic accidents including being hit by a train. Other causes were aging and infectious diseases 8% (12/140), dog bites 8% (11/140), abandoned infants 6% (8/140), fallen from trees or buildings 5% (7/140), air gun shots 3% (4/120) kept as pets 1% (2/140) and capture due to public complaints 1% (2/140) and unknown causes 5% (7/140). The results indicate that more cases are due to electrocution and troop mate attacks. Considering monkey conservation, more attention should be focused on preventing the accidents with electric wires in an urban setting. More studies should be carried out to understand the behavior of adult males within their troop to prevent injuries done to other troop mates.

Keywords: Sri Lankan purple-faced monkey, toque macaque, Western Province

Identification and morphological characterization of *Armillifer moniliformis* isolated from Indian rock python (*Python molurus*)

H.M.H.J. De Silva[1]*, D.S. Thilakarathne[1] and V.P.M.K. Abeywardana[2]

[1]*Division of Parasitology, Department of Veterinary Pathobiology, Faculty of Veterinary Medicine and Animal Science, University of Peradeniya, Sri Lanka.*
[2]*Elephant Transit Home – Udawalawa, Department of Wildlife Conservation, Sri Lanka.*

Corresponding author: hasithjayasanka@gmail.com*

Sri Lanka poses a significant public health risk due to insufficient investigations into zoonotic infections among its wildlife, particularly snakes. During a postmortem examination of an adult female Indian Rock Python (*Python molurus*) brought from Udawalawe National Park to Elephant Transit Home – Udawalawa, segmented vermiform parasites were discovered attached to its pale collapsed lung. All lung parasites were fixed in 70% alcohol, and morphological studies were conducted using a dissecting microscope. It was identified as one of the Pentastomida, a crustacean belonging to the *Armillifer* genus. To determine the species, the total length of the body, number of annulations, length of the cephalothorax, anterior width, midpoint width, and width of the posterior region were measured, and the mean values of each parameter were calculated. Eighteen parasites were found in total, comprising nine males and nine females. The females were larger in length (mean ± sd: 68.9 ± 3.43 mm) than the males (mean ± sd: 28.3 ± 2.3 mm). Both genders exhibited a number of annulations ranging from 30 to 31, with a length of 30.7 ± 0.5 mm (mean ± sd). The length of the cephalothorax was 2.18 ± 0.28 mm (mean ± sd) in females while it was 1.38 ± 0.38 mm (mean ± sd) in males. The mean anterior width of the female and male parasite body were 3.5 ± 0.25 mm and 2.3 ± 0.24 mm, respectively. While the males had a midpoint width 1.9 ± 0.41 mm (mean ± sd) it was 3.46 ± 0.23 mm (mean ± sd) in females. The mean width of the posterior region of the body was 1.5 ± 0.31 mm and 0.56 ± 0.12 mm (mean ± sd) in female parasites and males parasites, respectively. Based on the host, predilection site, morphology, and morphometrics, the parasites were identified as *Armillifer moniliformis*, and molecular characterization is currently in progress. With humans as potential intermediate hosts, investigating their prevalence in snake populations and assessing associated public health risks is crucial.

Keywords: Wildlife, python, parasites, pentastomida, zoonoses

Comparison of two polymerase chain reaction (PCR) methods for the detection of *Megalocytivirus* in gill tissues of guppy (*Poecilia reticulata*)

K.L.N. Ananda[1], A.W. Kalupahana[1], S.H.N.P. de Silva[2] and S.S.S.de S. Jagoda[1*]

[1]*Centre for Aquatic Animal Disease Diagnosis and Research, Department of Veterinary Pathobiology, Faculty of Veterinary Medicine and Animal Science, University of Peradeniya*
[2]*Department of Crop Science, Faculty of Agriculture, University of Peradeniya*

*Corresponding author: *samanthika@vet.pdn.ac.lk*

Members of the genus *Megalocytivirus* in the family *Iridoviridae* are double stranded DNA viruses. They infect a broad range of fish species. Infected fish show non-specific clinical signs making early diagnosis difficult. Infectious spleen and kidney necrosis virus (ISKNV), the type species of the genus *Megalocytivirus* is considered an emerging pathogen in ornamental fish. Though viral culture is the "gold standard", PCR targeting the major capsid protein (MCP) gene is widely being used in the routine diagnosis of *Megalocytivirus* infections in fish. Objectives of this study were to evaluate two PCR methods on their ability to detect *Megalocytivirus* in DNA extracted from gill tissues of guppy, and to characterize *Megalocytivirus* by sequence analysis. A total of 57 samples of guppy (10 fish per sample, one sample per variety from each farm) were collected from 30 ornamental fish farms [Western (WP)-22, North-Western (NWP)- 21 and Central province (CP)-14]. Total DNA was extracted from pooled gill tissues from each sample using a commercial DNA extraction kit. Presence of *Megalocytivirus* was detected by two PCR methods using primers targeting partial MCP gene (a nested PCR, and a conventional PCR using universal primers specific for *Megalocytivirus*). None of the samples amplified the expected product with the conventional PCR. Thirteen samples [31.8% (7/22)-WP; 19% (4/21)-NWP; 14.3% (2/14)-CP] were found to be positive for *Megalocytivirus* by the nested PCR (22.8% positive). Sequence analysis of eight selected PCR positives of this study found to be closely related to ISKNV isolates from India with a nucleotide identity ranging from 98.4% to 100%. In the phylogenetic analysis, all eight sequences were clustered in the ISKNV clade. Interestingly, PCR-positive fish did not show any clinical signs of ISKNV. Therefore, these fish could be persistent carriers and may serve as a source for future outbreaks. In conclusion, the sensitivity of the nested PCR method was higher than conventional PCR. ISKNV was the predominant species of *Megalocytivirus* in guppies tested in this study. There is an urgent need for strengthening control and prevention measures of *Megalocytivirus* infections to reduce the potential damage to the ornamental fish industry.

Keywords: Megalocytivirus, guppy, *Poecilia reticulata*, ornamental fish, PCR

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Biosecurity compliance of farmers and antimicrobial susceptibility of *Aeromonas* and *Pseudomonas* spp. isolated from rearing water of selected ornamental fish farms in Gampaha District, Sri Lanka

D.B. Jayawardana[1], H.M. Nihal Padmasiri[2], Pramodi Sembapperuma[3*], R.A.U. Kaushalya[1] and S.S.K. Liyanage[1]

[1]CAADDR, Faculty of Veterinary Medicine and Animal Sciences, University of Peradeniya
[2]Department of Business Economics, Faculty of Management and Finance
University of Colombo
[3]Animal Quarantine Office, Colombo 2.

*Corresponding author: *pramodijs2013@gmail.com*

Inappropriate use of antibiotics can be related to the increased frequency of development of bacterial resistance in aquatic bacteria and facilitate the potential transfer of resistance genes from aquatic environments to animals and humans. *Aeromonas* and *Pseudomonas* are common inhabitants of the aquatic environment and are opportunistic pathogens of ornamental fish. Biosecurity compliance promotes fish health thus reducing the antimicrobial intervention incidences minimizing the antimicrobial selection pressure. There have been no many studies carried out in Sri Lanka to investigate the relationship between the biosecurity status and antimicrobial susceptibility patterns of aquatic bacteria isolated from rearing water in ornamental fish farms. The present study was conducted to determine the biosecurity status of selected ornamental fish farms in Gampaha District and the antimicrobial susceptibility of *Aeromonas* and *Pseudomonas* spp. isolated from fish tank water. Fifteen ornamental fish breeding farms were selected for the study, out of a total of 91 ornamental fish breeding farms present in Gampaha District. Water samples were collected from fish tanks and at the same time biosecurity measures of each farm were observed and biosecurity scores were calculated using a pretested questionnaire. The sediments of the water samples were cultured on GSP agar for the selective isolation of *Aeromonas* and *Pseudomonas*. *Pseudomonas* spp. were isolated in all samples (100%). Both *Aeromonas* and *Pseudomonas* spp. were isolated from six water samples (40%). Isolated *Aeromonas* showed remarkable resistance to amoxicillin (100%) and erythromycin (80%) and isolated *Pseudomonas* was resistant to amoxicillin (86%) and erythromycin (66%). Only *Pseudomonas* isolates were resistant to erythromycin (0.13%) and all *Aeromonas* isolates were susceptible to erythromycin (100%). Three isolates of *Aeromonas* and eleven isolates of *Pseudomonas* were multidrug resistant to the six antimicrobials (amoxicillin, trimethoprim sulfa, gentamicin, tetracycline, erythromycin and chloramphenicol) tested in this study and MAR index was higher than 0.2. No significant relationship was found between the biosecurity status in ornamental fish farms and the antimicrobial susceptibility of *Aeromonas* and *Pseudomonas* spp. by calculating the correlation coefficient in XLSTAT using biosecurity scores and the MAR index data. Two farms with the highest biosecurity scores which use antibiotics only for treatments had more *Pseudomonas* and *Aeromonas* isolates that were susceptible for antibiotics and had MAR indices less than 0.2. Findings of the study highlights that complying to good biosecurity measures in ornamental fish farms leads to the prudent use of antibiotics and therefore prevents emergence of MAR.

Keywords: Aeromonas, Pseudomonas, biosecurity, ornamental fish farms, MAR index

Transforming pet animal healthcare for Generation Z

Kanishka Bandaranayake[1]*, Ifthikar Wahid[2], Ranjana Wijeratne[2] and Ashoka Dangolla[1]

[1]*Department of Veterinary Clinical Science, FVMAS, University of Peradeniya, Peradeniya*
[2]*Dr. Paw, Level 3, Orchard Complex, Galle Road, Colombo 06*

*Corresponding author: *kanishka.hem@gmail.com*

Technological evolution is steering progress across all sectors, including pet animal healthcare. The shift towards integrating digital technologies into veterinary practices is now commonplace. This transition from paper-based to digital record-keeping enhances timely decision-making in administration, academia, and research. During a trial conducted at the Veterinary Teaching Hospital of Department of Veterinary Clinical Science from January 1 to March 31, 2024, a web/mobile-enabled app was used for entering all patient data. The objective was to transition from paper-based record-keeping to digital record-keeping thus increasing the efficiency of scientific data analysis. Two receptionists recorded all demographic information, and six clinicians documented clinical findings via their mobile devices. The resulting data was summarized within a week which provided comprehensive insights. The trial recorded 2,398 dogs and 686 cats, excluding repeat visits. Visits had been for 3,302 dogs, 908 cats, and 123 other animals. The dog breeds recorded were 1,310 cross breeds with 1,310 visits, 456 German Shepherds with 642 visits, 333 Labradors with 335 visits and 30 Dobermans with 50 visits. Notably, 97% of cases were reported between 8 AM and 4 PM, while 3% were recorded from 4 PM to 8 AM on the following day. Only very few cases were brought from 10 PM to 6 AM. For vaccinations and preventive medications, 321 dogs and 57 cats were presented, with anti-rabies vaccine accounting for 49.6%, DHPL 13.2% and DHL 12.7%. All surgeries had been conducted during office hours, and each clinician handled between15 to 34 cases per weekday. Consultation on weekdays averaged 33 (12 to 82) cases per day, while weekends averaged 13 cases per day. The software allows for the identification of peak times of work, which helps in staffing decisions and is easier to identify clinicians who may be resistant to software use. This data and the time invested indicate benefits of digital record-keeping i.e. less cumbersome and cheaper than paper records and requires less physical space for storage. The software enhances data quality, facilitates easier retrieval and analysis, and supports various research studies with minimal additional resource inputs It is obvious therefore, that digitalization will bring in newer dimensions which facilitate data management to make the pet animal industry more efficient and effective.

Keywords: Veterinary record keeping, digitalization, digital record keeping, clinic management software

Evaluation of the preparedness of veterinary graduates to the world of work

P. S. Sudusinghe[1], M. L. W. P. De Silva[2] and N. Wijayawardhane[3*]

[1]Faculty of Veterinary Medicine and Animal Science, University of Peradeniya
[2]Veterinary Medical Education Unit, Faculty of Veterinary Medicine and Animal Science, University of Peradeniya
[3]Department of Veterinary Clinical Sciences, Faculty of Veterinary Medicine and Animal Science, University of Peradeniya, Sri Lanka

*Corresponding author: *nayanaw@vet.pdn.ac.lk*

Day-one competencies (DOC) demarcate the essential skills that a graduate should achieve at the end of successful completion of the degree. As a professional degree offering institute, it is important to know the level of confidence (LOC) of the graduates in achieving DOCs. Therefore, a Google form-based survey was conducted to evaluate the perception of recent veterinary undergraduates of two consecutive batches (A and B) who followed the 2000 BVSc. curriculum of the University of Peradeniya regarding the achievement of DOCs. Volunteers from the two batches participated in the survey which included questions to assess the LOC related to OIE-stipulated DOCs. Data analysis focused on overall status of the respondents, comparison between the two batches, and comparison between the LOC in DOCs in different animal species. Response rate was 75.65% (149/152; A:70/80; B:45/72). Overall satisfaction in achieving the tested DOCs was expressed by 61.4% of the respondents (A:66.4%; B: 48.9%). There were significant disparities among LOC with achieving competencies based on animal species handled. Friedman and post hoc Wilcoxon tests showed that confidence in restraining, physical examination, and developing appropriate treatment protocols of dog, cat, and cattle were significantly higher than that of poultry and pig ($p<0.05$) in A. In two batches, when the LOC in diagnosing and treating common surgical conditions in cattle, developing treatment protocols for pigs and knowledge in modern reproductive techniques in pigs and cattle, were compared by Mann-Whitney test, significantly higher confidence was noted in A than B ($p<0.05$). Forty-three percent of A and 24.4% of B were confident about their knowledge of legislation relevant to veterinary practice. Majority of both batches were unsure about their knowledge in restraining wild, zoo and aquatic animals. COVID-19 was a constraint for A during their pre-clinical-year and limited number of clinical teachers was a critical issue for B which could be reflected with a relatively lower achievement of specific DOCs in B than A. This is an eye-opening study about the specific DOCs in which the recent graduates are not sufficiently competent. In-depth research in finding the underlying reasons would be helpful to enhance the preparedness of Day-one graduates.

Keywords: Day 1 competencies, veterinary graduates, Sri Lanka

Management of dermatitis associated with excessive shedding in Red-eared slider turtles: A clinical case report

Surangika Hapuarachchi*

PetVCare Animal Hospital, Colombo 05, Sri Lanka

*Corresponding author: *surangiha@gmail.com*

Red-eared slider turtles are popular as pet turtles. The scutes (plates) of the turtle shell flakes off as the turtle grows. Like with other reptiles the shedding (molting or sloughing) process is quite normal. During shedding, the scutes all over the shell on both the carapace and the plastron of old skin peels away from the new skin underneath revealing a fresh shiny layer. This shedding may happen several times a year and the frequency depends on factors such as their species, age, environment and management practices. Two red-eared slider turtles were brought to the clinic with signs of severe shedding and inflammation over the fresh shiny layers. They have been anorectic for 2-3 days and lethargic. Upon admission, one turtle died before treatments were commenced. The other turtle was treated with doxycycline (5 mg per kg dosage p.o once a day) to prevent the infection in the areas where the signs of severe inflammation were apparent. In addition, a preparation of vitamin A & D (200 IU per kg p.o once a day) was also administered. The turtle showed a rapid recovery and started eating and was completely recovered after 10 days of treatment.

Keywords: Red-eared slider turtle, excessive shedding, scutes

Notes

Notes