



SRI LANKA VETERINARY ASSOCIATION

PROCEEDINGS OF THE

**78th ANNUAL
SCIENTIFIC SESSIONS 2026**

**"Veterinary Science for Resilience and Recovery:
Safeguarding Animal Health, Livelihoods and
Ecosystems in a Changing Climate,"**

07th AUGUST 2026

The Grand Kandyan Hotel, Kandy

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² USA & Brazil Soybean Quality Dashboard, U.S. Soybean Export Council/AgCom, Federal Grain Inspection Service (FGIS) data, 2025.

³ Influence of the Origin of the Beans on the Chemical Composition and Nutritive Value of Commercial Soybean Meals, Universidad Politécnica de Madrid (García-Rebollar et al.), Animal Feed Science and Technology, 2016.



**78th Annual Scientific Sessions – International
Sri Lanka Veterinary Association**

Programme and Abstracts

07th August 2026
The Grand Kandyan
Hotel Kandy
Sri Lanka

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SRI LANKA VETERINARY

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78th ANNUAL SCIENTIFIC SESSIONS 2026

SRI LANKA VETERINARY ASSOCIATION

07th August 2026
The Grand Kandyan Hotel, Kandy

Programme

Venue: Royal Peacock Ballroom

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 Traditional Lighting of the Oil Lamp
9.30 a.m. – 9.40 a.m.	Welcome Address Dr. Sugath Pemachandra President, Sri Lanka Veterinary Association
9.40 a.m. – 9.50 a.m.	Address by Platinum Sponsor Dr. Susil Silva U.S. Soybean Export Council
9.50 a.m. – 10.20 a.m.	Keynote Speech Prof. Saman Nanayakkara Dean Faculty of Medicine University of Peradeniya
10.20 a.m. – 10.30 a.m.	Address by the Chair, Scientific Committee Prof. Susiji Wickramasinghe Chairman, Scientific Committee 2026
10.30 a.m. – 10.45 a.m.	Address by the Chief Guest Dr. Chin-Cheng Chou Professor Emeritus, National Taiwan University, Taiwan
10.45 a.m. – 10.55 a.m.	Vote of Thanks Dr. Uditha Wijesinghe Secretary, Sri Lanka Veterinary Association
10.55 a.m. – 11.15 a.m.	MORNING TEA
11.30 a.m. onwards	Parallel Technical Sessions

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 Ballroom**)
Animal Health I (**Venue: Golden Eagle Ballroom**)
Veterinary Public Health I (**Venue: Flamingo Ballroom**)
Animal Production and Veterinary Educational Research
(**Falcon Hall, 4th Floor**)

11.30 a.m. – 12.40 p.m. Mini Oral (**Blitz, 5th Floor**)

1.00 p.m. – 2.00 p.m. LUNCH

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

2.00 p.m. – 4.00 p.m. Clinical II (**Venue: Royal Peacock Ballroom**)
Animal Health II (**Venue: Golden Eagle Ballroom**)
Wildlife and Aquatic Veterinary Medicine (**Falcon Hall, 4th Floor**)
Veterinary Public Health II (**Flamingo Ballroom**)

4.00 p.m. – 4.10 p.m. Appreciations for the Scientific Committee, Chairs and Judges
of
Scientific Sessions 2026

4.10 p.m. – 4.15 p.m. Vote of Thanks
Dr. Thilini Anupama
Secretary, Scientific Committee 2026

4.15 p.m. AFTERNOON TEA

78th Executive Committee of SLVA

The President	Dr. Sugath Pemachandra
President Elect	Dr. Chamari Kannangara
Vice Presidents	Snr. Prof. Neil Alles Dr. Suneth Disnaka
Secretary	Dr. Uditha Wijesinghe
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Snr. Prof. Susiji Wickramasinghe

Secretary

Dr. Thilini Anupama

Track Chairs

Veterinary Clinical Sciences – Dr. Eranda Rajapaksha

Animal Health – Dr. Himali Wijesekera

Wildlife and Aquatic Veterinary Medicine – Dr. Dananjaya Karunaratna

Animal Production – Prof. Sanjeewa Prasad Jayaweera

Veterinary Public Health – Dr. Thusitha Karunaratne

Veterinary Educational Research – Prof. Nayana

Wijayawardhane

Members

Prof. Sampath Lokugalappatti

Dr. S.S.S. de Samanthika Jagoda

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Dr. Ganga Wijesinghe	Dr. Oswin Perera	Dr. Tilusha Manchanayake
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Prof. Susiji Wickramasinghe
Dr. Thilini Anupama
Dr. Eranda Rajapaksha
Dr. D.P. Himali Wijesekera
Dr. Dananjaya Karunaratna
Prof. Sanjeewa Prasad Jayaweera
Dr. Thusitha Karunaratne
Prof. Nayana Wijayawardhane
Dr. Samanthika Jagoda
Dr. Sampath Lokugalappatti

Message from the President, Sri Lanka Veterinary Association



Dr. Sugath Pemachandra
President
Sri Lanka Veterinary Association

It gives me immense pleasure and great pride to welcome you to the 78th Scientific Sessions of the Sri Lanka Veterinary Association, a truly historic occasion for our profession.

This year marks a significant milestone as we convene our Scientific Sessions as an International Scientific Session for the first time in the history of the Association. This achievement reflects not only the remarkable progress of veterinary science in Sri Lanka but also our growing engagement with the global veterinary community in addressing shared challenges and opportunities.

Today, the veterinary profession plays a pivotal role in safeguarding animal health and welfare, protecting public health, ensuring food security, preserving biodiversity, and advancing the principles of One Health. In a rapidly changing world confronted by emerging diseases, antimicrobial resistance, climate change, and evolving societal expectations, collaboration and scientific innovation have never been more important.

The theme of this International Scientific Session is “Veterinary Science for resilience and recovery, safeguarding animal health, livelihoods and ecosystems in a Changing climate”. I am delighted to welcome distinguished international and local speakers, researchers, academics, policymakers, practitioners, and students who have gathered here to exchange ideas, present new findings, and strengthen professional partnerships that transcend geographical boundaries.

As we celebrate this landmark event, we also recognize the dedication and vision of generations of veterinary professionals who have contributed to the growth and reputation of our Association over the past 86 years. Their legacy inspires us to continue striving for higher standards of professional service, scientific achievement, and societal contribution.

I extend my sincere gratitude to the 78 Executive Committee of Sri Lanka Veterinary association, Scientific Committee, sponsors, partners, and all members whose hard work and commitment have made this historic event possible. Their collective efforts have transformed a vision into reality.

I am confident that the discussions, collaborations, and friendships forged during these sessions will generate new knowledge, inspire innovation, and strengthen our collective capacity to contribute to animal health, public health, and sustainable development.

On behalf of the Sri Lanka Veterinary Association, I warmly welcome all participants and wish you a productive, enriching, and memorable experience at the 78th International Scientific Sessions.

Keynote Speech



Prof. Saman Nanayakkara

Dean

Faculty of Medicine

University of Peradeniya

Veterinary Medicine and Animal Welfare: from Past to the Present

The history of veterinary medicine is, in many ways, the history of human civilization itself. The close relationship between humans and animals is also as old as human civilization. Before human civilizations began, humans used animals initially as their sole food and later as the staple food. As permanent settlements emerged, humans brought animals from the wild into their communities, giving rise to a bond that shaped agriculture, transport, food production, companionship, religion, and culture. Ancient civilizations—including Mesopotamia, Egypt, Greece, Rome, China, India, and Sri Lanka—all bear testimony to this enduring relationship.

Throughout history, societies viewed animals through two important perspectives. The first was recognizing animals as indispensable partners in fulfilling human needs and the second was the ethical responsibility towards animal welfare. These two perspectives have continued to influence veterinary medicine through the centuries.

The 4th century BC Greek philosopher Aristotle famously stated, “Man is an animal, but the other animals were created for man’s sake.” He further wrote, “If therefore nature makes nothing without purpose or in vain, it follows that nature has made all the animals for the sake of men.” These words reflected the prevailing philosophical thought of the time—that animals existed primarily to serve human needs within the natural order. Similarly, the 7th century BC Greek poet Hesiod reminded society of the central place of animals in everyday life when he wrote, “First of all, get a house, and a woman, and an ox for the plough.” This simple statement illustrates how deeply animals were integrated into human survival and prosperity.

History tells us that it is almost impossible to identify exactly where veterinary medicine began. Most likely, veterinary care emerged soon after the domestication of animals. As civilizations flourished, veterinary knowledge evolved across China, Mesopotamia, Egypt, Greece, Rome, India, and many other regions, spreading through trade and cultural exchange.

In the Greek and Roman world, animals occupied a central place in the society. They supported agriculture, transportation, warfare, trade, religion, and even entertainment. Horses, oxen, sheep, goats, dogs, cats, birds, and many other species contributed not only to economic development but also to mythology, philosophy, and cultural identity. Even early veterinary practices emphasized disease prevention through stable hygiene, balanced

feeding, and herbal treatments—principles that continue to influence veterinary science today. Our own Sri Lankan heritage also reflects a profound respect for animals. The reign of King Buddhadasa is widely remembered for advancing medical care for both humans and animals, reminding us that compassion has long been embedded within our traditions.

However, with advancing of human civilization, animal abuse also heightened in multiple ways ranging from increased use of animals for food, using animals for sports and recreations to using animals for research.

Today, veterinary medicine has expanded far beyond caring for individual animals. It has become an essential component of global public health. The health of humans, animals, and the environment are inseparable. Emerging infectious diseases, antimicrobial resistance, food security, biodiversity conservation, and climate change all reinforce the importance of the One Health approach.

Today, we increasingly recognize that protecting human and animal health requires close collaboration between medical and veterinary colleagues. Physicians and veterinarians are partners in disease surveillance, food safety, zoonotic disease prevention, biomedical research, and environmental stewardship. I believe a substantial part of the future of the human society lies in strengthening partnerships between medicine, veterinary science, public health, and environmental sciences to address increasingly complex global health challenges.

Let us reflect on the remarkable journey of veterinary medicine—from the wisdom of ancient civilizations to the sophisticated science we practice today. The principles may have evolved, but the underlying purpose remains unchanged: to protect life, relieve suffering, and promote the wellbeing of both animals and humanity.

Message from the Chairman of the Scientific Committee 2026, Sri Lanka Veterinary Association



Snr. Prof. Susiji Wickramasinghe

Chairman

78th Scientific Sessions of the SLVA (International)

It is with great pleasure that I welcome you to the 78th Annual Scientific Sessions (International) of the Sri Lanka Veterinary Association (SLVA), held on 07th August 2026 at The Grand Kandyan Hotel, Kandy, Sri Lanka. On behalf of the Scientific Committee, I extend my warmest greetings to all delegates, researchers, practitioners, academics, policymakers, students, and distinguished guests who have gathered to share knowledge and strengthen collaborations in advancing veterinary science.

This year's theme, "**Veterinary Science for Resilience and Recovery: Safeguarding Animal Health, Livelihoods, and Ecosystems in a Changing Climate,**" reflects one of the most pressing global challenges of our time. Climate change continues to reshape disease patterns, threaten food security, impact biodiversity, and influence the health of animals, humans, and ecosystems alike. As veterinary professionals, we have a pivotal responsibility to develop evidence-based solutions that enhance resilience, support sustainable livestock production, protect wildlife, strengthen public health systems, and contribute to the One Health agenda. The scientific contributions presented at this conference highlight the commitment of our community to address these complex challenges through innovation, collaboration, and excellence in research.

The Scientific Sessions include six broad thematic areas that represent the diversity and strength of present-day veterinary science: Veterinary Clinical Sciences, Animal Health, Animal Production, Wildlife and Aquatic Veterinary Medicine, Veterinary Public Health, and Veterinary Educational Research. Together, these themes provide a vibrant platform for the exchange of scientific knowledge, interdisciplinary dialogue, and the dissemination of research that has direct relevance to animal health, national development, and environmental sustainability.

We are delighted by the enthusiastic response received for this year's conference. A total of 89 abstracts were submitted from researchers representing a wide range of institutions and disciplines. Following a rigorous peer-review process, 80 abstracts were accepted for presentation, reflecting the high scientific standards maintained by the Association. The scientific programme features parallel technical sessions comprising both Oral and Mini-Oral presentations, providing an excellent opportunity for researchers to showcase their findings, exchange ideas, and foster future collaborations.

The success of these Scientific Sessions is the result of the collective dedication of many individuals. I extend my sincere appreciation to all authors and researchers who entrusted us

with their valuable work and contributed to the richness of the programme. My heartfelt gratitude goes to the members of the Scientific Committee, the Track Chairs, and our dedicated panel of reviewers, whose expertise, commitment, and meticulous evaluations ensured the integrity and quality of the scientific programme. I also wish to acknowledge the unwavering guidance and administrative support extended by the 78th SLVA Executive Committee, whose leadership has been instrumental in making this event possible.

Finally, I thank every participant for being part of this important gathering. Your active engagement, thoughtful discussions, and willingness to share experiences will undoubtedly enrich the conference and inspire future collaborations. I hope these Scientific Sessions provide an intellectually stimulating and rewarding experience, fostering new partnerships and innovative ideas that will strengthen veterinary science and contribute to a healthier, more resilient future for animals, people, and our shared environment.

I wish you a productive and memorable conference.

Message from the Chief Guest, 78th Scientific Sessions of the SLVA



Professor Emeritus Chin-Cheng Chou

National Taiwan University

Taiwan

WVA Councilor for Asia and Oceania, 2022-2026

Cutting-age of the World Veterinary Association (WVA)'s role in Promotion Animal Welfare and Protection All Health Discipline

The World Veterinary Association (WVA) represents the global veterinary profession as the umbrella organization for National Veterinary to bring veterinarians from all over the world together, to share experiences, to exchange ideas and to join forces for the promotion and development of different area of all veterinary medicines. The WVA defends the interest of the health and welfare of animals and people as well as the interest of its member organizations and their members. There are about 100 Constituent Members and 10+ Observer Members. The Council comprises the President, President Elect, Immediate Past President, and 14 elected representatives from six different world regions and International Organization members. The WVA prioritized four core issues: Animal Welfare, Pharmaceutical Stewardship, Veterinary Education and One Health which are populated by Councilors and ad hoc member experts from WVA Constituent Members. WVA is responsible for notable global veterinary efforts such as World Veterinary Day, the World Veterinary Association Congress, WVA Global Veterinary Awards, WVA/MSD Animal Health Veterinary Student Scholarship, veterinary webinars, and position statements to advance the profession of veterinary medicine. The WVA Animal Welfare and One Health Working Groups have recently published several documents. They are the Position Statement on the Welfare of Animals During Land Transportation- Terrestrial Livestock and Poultry and the Factsheet on Brachycephaly in Dogs, and also the Position Statement on the Global Climate Change Emergency and the Position Statement on Zoonoses Emergency in Relation to Wildlife Disruption and Trade, highlighting the profession's role in tackling global health and environmental challenges. The WVA and Brooke developed the Global Essential Veterinary Medicine List (EVML) to evolve as a key resource supporting animal health and responsible medicine use worldwide which are supported both from the World Health Organization (WHO) and the World Organization for Animal Health (WOAH) strengthen the EVML's role in guiding countries on access to essential veterinary medicines while supporting antimicrobial stewardship and One Health objectives.

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



Dr. A.W. Kalupahana

Dean

Faculty of Veterinary Medicine and Animal Science

University of Peradeniya

I am pleased to send this message for the Annual Scientific Sessions of the Sri Lanka Veterinary Association, 2026.

The Sri Lanka Veterinary Association, established in 1940, has for over eight decades provided the professional body through which veterinarians in this country are represented, and through which standards of practice and continuing education are maintained. Its Annual Scientific Sessions have, since their inception, functioned as the principal forum at which research conducted across the veterinary and allied sciences in Sri Lanka is presented and discussed. The Sri Lanka Veterinary Journal, published by the Association since 1953, and the Proceedings of the Annual Scientific Sessions, together form the record of this research and of its development over time. The Faculty of Veterinary Medicine and Animal Science of the University of Peradeniya, as the only institution in Sri Lanka that trains veterinary surgeons, has a direct and continuing interest in the Annual Scientific Sessions, since a substantial proportion of the work presented at these sessions originates from its academic staff, its postgraduate students, and its graduates now working across the profession.

The theme selected for 2026, "Veterinary Science for Resilience and Recovery: Safeguarding Animal Health, Livelihoods, and Ecosystems in a Changing Climate," addresses a set of problems that this Faculty considers central to veterinary practice and research at present. Changes in climate affect the distribution and behaviour of disease vectors, the availability and quality of feed and water for livestock, the productivity of farming systems on which rural livelihoods depend, and the stability of the wider ecosystems in which animal and human health are connected. These are not separate problems to be addressed one at a time. They require veterinarians, public health professionals, and policymakers to work from shared evidence and toward coordinated responses. The research presented in this scientific session, covering animal production, animal health, public health, veterinary clinical science, wildlife, and aquatic animal medicine represent contributions toward that shared body of evidence.

Research of this kind depends on sustained work carried out under conditions that are not always straightforward, including limited funding, competing clinical and teaching responsibilities, and, for many contributors, the difficulty of conducting fieldwork in areas already affected by changing environmental conditions. The value of this scientific session lies in bringing that work together in one place, so that it can be examined, questioned, and built upon by others in the field.

I thank the Sri Lanka Veterinary Association, its Scientific Sessions Committee, and the reviewers who have given their time to assess the submissions and for the work involved in producing the proceedings of the scientific session 2026. I also thank the authors for their contributions. I hope that the research presented here will be of use to those working directly in veterinary practice, to those engaged in research and teaching, and to those responsible for policy on animal health and production in Sri Lanka.

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



Dr. B.S.S. Perera

Director General

Department of Animal Production & Health

It is my great pleasure to extend my warmest greetings to the Sri Lanka Veterinary Association on the occasion of its 78th Annual Scientific Sessions.

The Annual Scientific Sessions of the SLVA have, for many decades, served as a premier platform for the dissemination of veterinary research, professional dialogue, and the exchange of innovative ideas.

The theme of this year's Scientific Sessions, "Veterinary Science for Resilience and Recovery: Safeguarding Animal Health, Livelihoods and Ecosystems in a Changing Climate," is both timely and highly relevant. As we face the challenges posed by climate change, emerging diseases, and the growing demand for sustainable food systems, the veterinary profession has an increasingly important role to play in safeguarding animal health, protecting public health, and supporting national development through the One Health approach.

I commend all the authors, reviewers, and members of the Scientific Committee for their invaluable contributions in continuing the long-standing tradition and high standards of the Annual Scientific Sessions. I am confident that the knowledge shared through these abstracts will stimulate further research and contribute meaningfully to the advancement of veterinary science and national development.

I congratulate the Sri Lanka Veterinary Association on the successful organization of the 78th Annual Scientific Sessions and extend my best wishes for a productive and successful conference.

Technical Sessions: 78th Annual Scientific Sessions of SLVA 2026

Clinical I Session (11.30 a.m. – 1.20 p.m.)		
Session Chair – Dr. Eranda Rajapaksha		Page No.
11:30 a.m.	A Retrospective Study of Incidental Reproductive Congenital Anomalies in Feline Sterilization Cases at Dogstar Foundation, Catstar Cat Clinic, Negombo, Sri Lanka. (2024-2026). <u>B.J. Wijenayaka</u> , W.M.N. Dilhani, K.D.G. Kaushalya, M.M.D.D.B. Herath, T.D.M.C. Wickramasinghe, E. Jathushan, I.G.S.S.D. Senadheera, G.S.M.C.K. Medagoda	1
11:42 a.m.	Effect of Pentosan Polysulfate Sodium on Pain and Mobility in Dogs with Osteoarthritis: A Sequential Multimodal Study. <u>S.D.M.A.Z. Lambert</u> , S.K.A.S. Fernando, D.M. Siriwardane	2
11:54 a.m.	Canine Oral Neoplasms: Clinical and Histopathological Insights from Five Cases. <u>K.M.S.M.K. Senavirathne</u> , K.A.R.K. Perera, R.R.M.K.K. Wijesundera, H.M.S. Wijekoon	3
12:06 p.m.	Diagnostic Challenges and Surgical Management of Gallbladder Mucocele in Canine and Feline Patients. <u>S.K.A.S. Fernando</u> , D.M. Siriwardane, H.K.U.S. Premachandra, D.S.S. Rathnaweera, K.A.T.D. Peiris, R.M.A.N. Senevirathne	4
12:18 p.m.	Lyme-Associated Nephropathy in Dogs: Clinicopathological Characterization, Breed Distribution, and Survival Outcomes. <u>P. Kurapati</u> , S. Pemmasani, A. Kandimalla, Sesha Sai Krishna Kasaraneni	5
12:30 p.m.	Effect of Body Condition Score on Interdigital Splay and Its Association with Interdigital Inflammation in Dogs. <u>O.K.A.S. Ovitigala</u> , H.M.H.S. Ariyaratna	6
12:42 p.m.	Comparative Evaluation of Erythrodysplastic Changes in Anaemic Dogs with Primary IMHA, Babesiosis-Associated Secondary IMHA, and Babesiosis. <u>N. Bandaranayaka</u> , D.R.A. Dissanayake, R.M.F. Hardi, H. Randombage, N. Mullegama, R.R. Hirushanthan, H.R.N. Jinadasa, H.M.H.S. Ariyaratna	7
12:54 p.m.	Clinical Evaluation of Immunoglobulin Therapy in Canine Parvoviral Enteritis: A Case Series of 33 Dogs. <u>H.T.M. Jayathilake</u>	8
01.06 p.m.	Haemodialysis in Dogs with Severe Renal Dysfunction: Clinical Experience from India. <u>M. Chandrasekar</u> , G.S. Haritha, R. Ramprabhu	9

Animal Health Session I (11.30 a.m. – 1.00 p.m.)		
Session Chair – Dr. D.P. Himali Wijesekera		Page No.
11:30 a.m.	Granulosa Cell Tumor-Associated Cystic Endometrial Hyperplasia-Pyometra Complex Culminating in Multiple Organ Dysfunction in a Belgian Malinois: A Case Report. <i>H.D.N.Y. Gunathilaka, S.A.S. Indunika, K.V. Keerthisinghe, P.R. Dhanathanarayana, W.R. Jayaweera, D.M.A.P. Dissanayake, T.A. Gunawardana and R.R.M.K.K. Wijesundera</i>	10
11:42 a.m.	Histopathological Evaluation of Intrahepatic Bile Duct Alterations in Dogs with Chronic Kidney Disease. <i>H.D.N.Y. Gunathilaka, S.A.S. Indunika, S. Subiekshana, M.S.E. Premalal, T.A. Gunawardana, R.R.M.K.K. Wijesundera</i>	11
11:54 a.m.	Immunophenotypic Characterization of Lymphocyte Subsets in Sri Lankan Indigenous Cattle. <i>K.L.G.C. Lakshani, L. Priyangani, N.M.T. Anupama</i>	12
12:06 p.m.	Molecular Characterization, Antimicrobial Resistance, and Virulence Profiling of <i>Staphylococcus aureus</i> Isolated from Bovine Mastitis Milk in the Western Province of Sri Lanka. <i>K.W. Hewawitharane, C.M. Vidanapathirana, A.A.T. Amaya, B.G.M.I Batuwanthudawa, I.N. Pathirana, D.P.H Wijesekera</i>	13
12:18 p.m.	Fatal Parasitic Aortitis and Aortic Rupture Associated with <i>Spirocerca</i> sp. Nematodes in a Goat. <i>S.A.S. Indunika, H.D.N.Y. Gunathilaka, K.V. Keerthisinghe, P.R. Danthanarayana, M.S.E. Premalal, T.A. Gunawardana, R.R.M.K.K. Wijesundera</i>	14
12:30 p.m.	Molecular Detection and Epidemiological Assessment of Major Tick-Borne Haemoparasites in Cattle from Five Veterinary Ranges of Uva Province, Sri Lanka. <i>S.S. Iddamaldeniya, N.K. Jayasekera, C.L.M. Dissanayake, S.A.D.K.T. Maheepala, B.M. Wimalarathne, H.M.S.P. Herath, K.V.I.N. Kumaravithana, P.G.I.D. Amarasiri, N.D.S. Dissanayake, Hemanthini Athapaththu</i>	15
12:42 p.m.	Hemoparasites in Backyard Chickens in Sri Lanka: Morphological Detection, Molecular Confirmation and Occurrence across Agro-Ecological Zones. <i>D.M.A.R. Dissanayake, I.P. Nambuge, D.S. Thilakarathne</i>	16

Veterinary Public Health Session I (11.30 a.m. – 1.00 p.m.)		
Session Chair – Dr. Thusitha Karunaratna		Page No.
11:30 a.m.	Beta Coronaviruses of the Nobecovirus and Hibecovirus Subgenera in Bat Faecal Samples from a Public Entertainment Site in the Central Province of Sri Lanka. <i>T. Fernando, B.N. Iqbal, S.M.S. Cheng, V. Dhanasekaran, J.S.M. Peiris, F. Noordeen</i>	17
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A Retrospective Study of Incidental Reproductive Congenital Anomalies in Feline Sterilization Cases at Dogstar Foundation, Catstar Cat Clinic, Negombo, Sri Lanka. (2024-2026)

B.J. Wijenayaka, W.M.N. Dilhani, K.D.G. Kaushalya, M.M.D.D.B. Herath,
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Congenital anomalies are structural or functional abnormalities present from birth, resulting from genetic, chromosomal, or developmental deviations during embryogenesis. These types of anomalies may be detected incidentally during sterilization procedures. No Sri Lankan publications on these anomalies highlight the existing knowledge gap. The objective of this study is to document types of incidental reproductive congenital anomalies encountered and to determine their prevalence during feline sterilization surgeries at the Dogstar Foundation, Catstar Cat Clinic in Negombo, Sri Lanka. Surgical records from January 2024 to March 2026 were reviewed for 1,565 males, and from January 2025 to March 2026 for 2,696 females. Records included all cats (>1 kg) presented for routine sterilization, drawn from the community population. Cryptorchidism was diagnosed when a testis could not be manually displaced into the scrotum. Uterus unicornis was recorded when one uterine horn was absent while the ipsilateral ovary was present. A rudimentary uterine horn was recorded when one horn showed a clear difference in size or development compared to the contralateral horn. Male pseudohermaphroditism was recorded when testes were present with female-type external genitalia. Anomalies were identified by two senior veterinarians who also performed the surgical interventions, based on gross anatomical observation during surgery. Reproductive anomalies were documented in 23 felines, giving an overall prevalence of 0.54%. In males, 1.09% (n=17) were cryptorchids, with 13 (76.5%) unilateral and 4 (23.5%) bilateral cases observed. A prevalence of 0.06% (n=1) was identified as male pseudohermaphroditism. Three cases (0.11%) were identified as uterus unicornis. Two cases (0.07%) were identified as rudimentary uterine horns, one complicated by pyometra. This retrospective study provides the first baseline data on feline congenital reproductive anomalies from Sri Lanka. Cryptorchid prevalence is comparable to international reports (0.8-1.9%), while bilateral cryptorchidism (17%) and uterus unicornis (0.06%) prevalence is higher than published estimates, supporting continued surveillance. Most anomalies are clinically silent and identified only at surgery, highlighting the importance of careful intraoperative assessment. Standardised documentation fields should be added to surgical records to improve data quality and ongoing surveillance. This study supports systematic documentation in sterilization programs as a practical means of building population-level clinical data.

Keywords: *Feline Sterilization, Incidental Findings, Reproductive Congenital Anomalies, Sri Lanka*

Effect of Pentosan Polysulfate Sodium on Pain and Mobility in Dogs with Osteoarthritis: A Sequential Multimodal Study

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Osteoarthritis (OA) is a chronic degenerative joint disease, causing pain and reduced mobility, particularly in geriatric dogs. Conventional analgesics mainly provide symptomatic relief, whereas Pentosan Polysulfate Sodium (PPS) has demonstrated potential disease-modifying effects in previous studies. However, comparative clinical evidence remains limited. This study evaluated PPS as an adjunct therapy for canine OA by comparing pain scores, mobility, and quality of life between treatment phases. Twenty-five dogs over 10 years of age with radiographic appendicular OA, body condition scores of 2–4/5, clinical signs for less than 6 months, and high pain scores were enrolled at Pet Vet Clinic between 2025 and 2026. Pain assessment included owner questionnaires and veterinary examination with joint manipulation. The study consisted of two phases. Initially, dogs received conventional multimodal therapy comprising NSAIDs (2 weeks), gabapentin (10 mg/kg BID), amantadine (5 mg/kg SID), and physiotherapy for 6 months. Subsequently, dogs received six intramuscular PPS injections (3 mg/kg) alongside ongoing analgesics and physiotherapy. Clinical outcomes, including activity level, exercise tolerance, morning stiffness, pain at rest and during movement, and overall mobility, were assessed using owner-reported questionnaires. Assessments were performed weekly during the first month and monthly thereafter using the Canine Brief Pain Inventory (CBPI) and Glasgow Composite Measure Pain Scale. Pain interference scores were compared between phases using a paired t-test. A significant reduction in pain scores was observed during the second treatment phase ($p = 0.0001$), with a mean decrease of 2.56 points (95% CI: 1.82–3.30) and a large effect size (Cohen's $d_z = 1.42$). Improved mobility and quality of life were observed, with 15 dogs (60%) showing marked mobility improvement. Four dogs (16%) showed mild improvement, potentially influenced by concurrent geriatric diseases, while six dogs (24%) showed no clinical response due to comorbidities including cranial cruciate ligament rupture, spondylosis, and osteosarcoma. Multimodal therapy including PPS was associated with improved pain control, mobility, and quality of life in geriatric dogs with OA. PPS was well tolerated and may provide additional clinical benefits. Previously reported mechanisms involving inflammatory modulation, cartilage protection, hyalurone synthesis, and nerve growth factor pathways may contribute to its effects but were not assessed in this study. Future studies with larger populations and objective mobility assessments are recommended to further evaluate PPS-specific effects.

Keywords: *Geriatric Canine, Multimodal Analgesia, Pentosan, Pain*

Canine Oral Neoplasms: Clinical and Histopathological Insights from Five Cases

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Oral tumours are the fourth most common neoplasms in dogs, with a high proportion being malignant. Delayed detection due to infrequent oral examination leads to delayed treatment and a poor prognosis. This study describes the clinical and histopathological features of five canine oral tumours presented to the Veterinary Teaching Hospital, University of Peradeniya, over a period of two months. Five dogs, including a 4-year-old female, two, 9-year-old males, and two, 12-year-old dogs (one male, one female), presented with oral masses, with signs including halitosis, ptyalism, reduced appetite, difficulty in mastication and facial asymmetry. The masses appeared as gingival enlargements or friable growths on the gums, palate, tongue, or labial regions, with occasional ulceration and tooth displacement. Surgical excision of the masses was performed, together with removal of deformed teeth, and tissue samples were fixed in 10% neutral buffered formalin for histopathological examination. Histopathology revealed two cases as fibrosarcoma, two cases as malignant melanoma, and one as a cutaneous neurofibroma. No adjunctive therapies were instituted due to a lack of owner compliance. The findings highlight the predominance of malignant tumours among canine oral neoplasms within a short duration. Clinical presentation was variable, emphasizing the importance of thorough oral examination during routine veterinary visits, and histopathology remains essential for definitive diagnosis. Early detection, client education and timely veterinary intervention are critical in improving clinical outcomes in canine oral neoplasia.

Keywords: *Canine Oral Neoplasia, Malignant, Fibrosarcoma, Malignant Melanoma, Cutaneous Neurofibroma*

Diagnostic Challenges and Surgical Management of Gallbladder Mucocele in Canine and Feline Patients

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Gallbladder mucocele (GBM) is an acquired disorder of the hepatobiliary system characterized by abnormal accumulation of inspissated bile and progressive gallbladder distension, extrahepatic biliary obstruction and, in advanced cases, bile leakage or peritonitis. Early diagnosis can be challenging due to nonspecific clinical presentation and overlap with other hepatobiliary and gastrointestinal disorders. This report compares the clinical presentation, diagnostic approach, surgical management, and postoperative outcomes of gallbladder mucocele in veterinary patients, emphasizing factors influencing prognosis and treatment success. A 7-year-old female Doberman Pinscher presented with chronic polyuria and polydipsia. Initial clinicopathological evaluation revealed marked hepatobiliary enzyme elevation with normal other parameters. Abdominal ultrasonography revealed a gallbladder lesion consistent with mucocele formation, showing immobile echogenic bile and a striated intraluminal ("kiwi fruit") pattern. Following three days of medical stabilization with hepatoprotectives and analgesics, exploratory laparotomy was performed. Cholecystectomy was carried out as definitive treatment with careful dissection to prevent bile spillage, along with sampling bile for culture and histopathological evaluation. Postoperative management included supportive therapy and antimicrobial treatment guided by culture and sensitivity. The patient recovered well with normalization of hepatobiliary parameters on follow-up. The second case involved a 5-year-old female cat presenting with a 2-week history of abdominal distension, pyrexia, and icterus. Initial imaging demonstrated gastrointestinal hypomotility and biliary dilation, and medical management was initiated. However, progressive clinical deterioration with persistent hyperbilirubinemia necessitated exploratory laparotomy. Intraoperative findings included gallbladder distension with bile leakage and localized bile peritonitis, consistent with complicated GBM. Cholecystectomy with abdominal lavage was performed with appropriate biliary contamination control. Cytology revealed intracellular bacteria, and culture later yielded *Escherichia coli* and *Pseudomonas* spp. Initial postoperative recovery was favourable with clinical and biochemical improvement. However, following discharge, interruption of supportive care associated with progressive clinical deterioration culminating in a fatal outcome. These cases highlight variability in clinical presentation and emphasize the diagnostic value of ultrasonography in early identification of GBM. Cholecystectomy with meticulous surgical techniques, including careful biliary handling and prevention of bile spillage, remains the definitive treatment. Outcomes are strongly influenced by disease stage, intraoperative findings, and continuity of postoperative medical care and monitoring.

Keywords: Gallbladder, Cholecystectomy, Hepatobiliary

Lyme-Associated Nephropathy in Dogs: Clinicopathological Characterization, Breed Distribution, and Survival Outcomes

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Lyme-associated nephropathy is one of the most severe complications of canine Lyme borreliosis caused by *Borrelia burgdorferi*. It is characterized by immune-mediated glomerular injury, progressive protein-losing nephropathy, and renal failure, often resulting in an unfavorable prognosis. The present retrospective study was undertaken to characterize the clinicopathological features, breed distribution, IRIS staging, and survival outcomes of dogs diagnosed with Lyme-associated nephropathy. Medical records of 19 serologically confirmed dogs presented to the Hamlin Veterinary Clinic, USA, were reviewed. Infection was confirmed using SNAP 4Dx Plus®, AccuPlex®, or 4Dx assays. Complete hematological and serum biochemical data were available for 14 dogs, which were included in the clinicopathological evaluation. Pit Bull Mixes (21.4%) and Australian Shepherds (14.3%) were the most frequently affected breeds, with a mean age at diagnosis of 10.7 years (range: 4.0–19.2 years). Common clinicopathological abnormalities included azotemia, hypoalbuminemia, leukocytosis, and normocytic normochromic anemia. Based on IRIS staging, five dogs (35.7%) were classified as Stage I, four (28.6%) as Stage II, three (21.4%) as Stage III, and two (14.3%) as Stage IV at presentation. Dogs diagnosed in IRIS Stage I exhibited the longest mean survival time (217.2 days), whereas survival decreased markedly with disease progression to 41.8 days, 11.5 days, and 11.0 days in Stages II, III, and IV, respectively. Histopathological findings in selected cases were consistent with immune-mediated glomerular injury and chronic renal damage. The findings demonstrate that Lyme-associated nephropathy is a significant renal complication of canine Lyme borreliosis, with survival strongly influenced by the stage of renal disease at diagnosis. Early recognition of renal involvement, prompt IRIS staging, and timely therapeutic intervention are critical for improving clinical outcomes and prolonging survival in affected dogs.

Keywords: Lyme Borreliosis, Lyme Nephropathy

Effect of Body Condition Score on Interdigital Splay and Its Association with Interdigital Inflammation in Dogs

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Interdigital inflammation is a common condition affecting the interdigital skin and adjacent soft tissues of canine paws. Mechanical stress associated with excess body weight may contribute to its development by increasing interdigital splay and exposure of the interdigital skin to friction and trauma. Body condition score (BCS), assessed using a standardized 9-point scale, provides a clinically relevant assessment of body fat and is more informative than body weight alone. This study investigated the hypothesis that dogs with a higher BCS exhibit greater interdigital splay, thereby increasing the risk of interdigital inflammation. A total of 61 ambulatory medium- to large-breed dogs with normal limb conformation were included. Body condition scores were categorized as below ideal (BCS 1–3), ideal (BCS 4–5), and above ideal (BCS 6–9). Interdigital splay was quantified from paw footprint measurements obtained while dogs were standing. Interdigital inflammation was classified as none/mild or moderate/severe. The study population comprised 32 (52.5%) males and 29 (47.5%) females, including 25 Labrador Retrievers, 25 German Shepherd Dogs, 10 Golden Retrievers, and one Lion Shepherd. There were 36 (59.0%) adult dogs (≥ 3 years), 17 (27.9%) young adults (1–3 years), and 8 (13.1%) young dogs (< 1 year). Interdigital splay was significantly greater in the forelimbs than in the hind limbs ($p < 0.05$). Dogs with an above-ideal BCS exhibited significantly greater interdigital splay, particularly in the forelimbs ($p < 0.05$). Forelimb interdigital inflammation was also significantly more severe ($p < 0.05$). Logistic regression identified above-ideal BCS (OR = 25.0; 95% CI: 3.946–157.686) and interdigital splay (OR = 1.042; 95% CI: 1.011–1.074) as significant predictors of forelimb interdigital inflammation ($p < 0.05$). No significant associations were observed with age, sex, breed, or concurrent diseases ($p > 0.05$); however, these findings should be interpreted cautiously given the relatively small sample size. These findings suggest that excess body fat may increase forelimb loading, resulting in greater interdigital splay and an increased risk of interdigital inflammation.

Keywords: Inflammation, Dog, Body condition, Inter-digital

Comparative Evaluation of Erythrodysplastic Changes in Anaemic Dogs with Primary IMHA, Babesiosis-Associated Secondary IMHA, and Babesiosis

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Dyserythropoiesis is characterized by abnormal erythroid maturation resulting in morphological abnormalities of circulating erythrocytes and erythroid precursor cells. In dogs, erythrodysplastic changes are mainly associated with myelodysplastic and myeloproliferative disorders, whereas their occurrence in infectious and immune-mediated diseases is rarely reported and has largely been described in non-regenerative anaemia. This study comparatively evaluated erythrodysplastic changes in dogs with primary immune-mediated haemolytic anaemia (IMHA), babesiosis-associated secondary IMHA, and babesiosis. Sixty-seven anaemic dogs were prospectively enrolled and categorized into primary IMHA (n = 26), babesiosis-associated secondary IMHA (n = 29), and babesiosis alone (n = 12). Primary IMHA was diagnosed according to American College of Veterinary Internal Medicine guidelines, while babesiosis was confirmed by blood smear examination and polymerase chain reaction. Complete blood counts and peripheral blood smear examinations were performed at presentation and at two-week intervals for 60 days. Erythrodysplasia was diagnosed when dysplastic erythroid features were identified in more than two out of ten high-power microscopic fields. Statistical analyses included chi-square, Kruskal–Wallis H, Spearman's rank correlation, and Kaplan-Meier survival analyses. Erythrodysplasia was identified in 19/67 dogs, occurring most frequently in babesiosis-associated secondary IMHA (12/29; two mild, four moderate, six severe), followed by primary IMHA (5/26; two mild, one moderate, two severe), while only two dogs with babesiosis alone showed mild changes. Dysplastic features included atypical nuclear remnants, multinucleation, abnormal nuclear extrusion, asynchronous nuclear-cytoplasmic maturation, partially separated metarubricytes, and atypical erythroid mitotic figures. All but 10 dogs had regenerative anaemia at presentation, and regeneration subsequently developed in five of the remaining dogs. Erythrodysplasia severity was not significantly associated with age, sex, breed, haematocrit, white blood cell count, platelet count, or *Babesia gibsoni* infection status ($r_s = 0.19$, $p = 0.15$; all other $p > 0.05$). Median survival was significantly shorter in dogs with erythrodysplasia (3 days; 95% CI: 1.5–4.5) than in dogs without dysplastic changes (18 days; 95% CI: 0.91–35.1; $p < 0.001$). Among evaluated variables, only sex influenced survival, with males surviving significantly fewer days (3 days; 95% CI: 0.96–5.0) than females (14 days; 95% CI: 9.4–18.6). These findings demonstrate that erythrodysplastic changes occur in regenerative haemolytic disorders, particularly babesiosis-associated secondary IMHA, and are associated with markedly reduced survival, highlighting their potential prognostic value in canine haemolytic anaemia.

Keywords: Red Blood Cells, Dysplasia, *Babesia gibsoni*, Immune-mediated

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Clinical Evaluation of Immunoglobulin Therapy in Canine Parvoviral Enteritis: A Case Series of 33 Dogs

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Canine parvoviral enteritis is a contagious disease caused by Canine Parvovirus type 2 (CPV-2). It is a major cause of severe gastroenteritis associated with high morbidity and mortality, mostly in unvaccinated young dogs. Although intensive supportive care is widely used, outcomes can be poor in advanced cases. The clinical response of naturally infected dogs treated with anti-canine parvovirus immunoglobulin in addition to standard supportive therapy is evaluated in this study. 33 dogs in Sri Lanka diagnosed with canine parvoviral enteritis between January and April 2026 were selected for the clinical trial based on compatible clinical signs, positive rapid antigen test results, and client consent. The Selected animals showed the clinical signs of vomiting, hemorrhagic or watery diarrhea, anorexia, lethargy, dehydration, and fever. All cases were treated with supportive therapy, including intravenous fluids, antibiotics, antiemetics, gastric protectants, and nutritional support. At the dose of 0.4 mL/kg, purified anti-canine parvovirus immunoglobulin (CanGlob-P[®], Terezín, Czech Republic) was administered to 18 dogs intravenously once daily for 3–5 days. Significant improvements in appetite, vomiting frequency, stool consistency, and hydration status, along with reduced mortality, were observed in dogs treated with CanGlob-P[®]. Among 18 cases in both vaccinated and unvaccinated dogs, 13 (72.2%) have recovered, 1 (5.6%) has partially recovered, and 4 (22.2%) have died. The survival rate of the dogs is 77.8%. Most dogs required 3 days of therapy, with treatment duration from 2 to 5 days. Improvement in clinical signs, including vomiting, fecal consistency, appetite, and dehydration, was commonly observed within 48 to 72 hours after administration of anti-canine parvovirus immunoglobulin (CanGlob-P[®]). Mortality was observed mainly in the dogs with severe hemorrhagic diarrhea, prolonged anorexia, and severe dehydration. Clinical recovery time for canine parvoviral enteritis can be shortened by early administration of anti-canine parvovirus immunoglobulin (CanGlob-P[®]) in combination with conventional supportive treatment. The results of this study indicate the need for additional controlled studies involving larger populations to confirm therapeutic efficacy.

Keywords: Canine Parvovirus, Immunoglobulin Therapy, Passive Immunotherapy

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Haemodialysis in Dogs with Severe Renal Dysfunction: Clinical Experience from India

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Haemodialysis is an important renal replacement therapy used in small animal veterinary practice for the management of acute kidney injury (AKI), chronic kidney disease (CKD), toxin exposure, and severe metabolic disturbances. Although its application in India remains limited due to financial, infrastructural, and technical constraints, advances in veterinary critical care have increased its availability in specialized centers. The present study evaluated the clinical application and outcomes of haemodialysis in 86 dogs with severe renal dysfunction presenting with blood urea nitrogen (BUN) concentrations ranging from 56–230 mg/dL and serum creatinine concentrations ranging from 2.8–25 mg/dL before dialysis. Haemodialysis was performed using a human FX5 haemodialyser following temporary double-lumen central venous catheterization for vascular access, with standard anticoagulation protocols and intensive supportive care. Dialysis frequency (up to three sessions per week) was determined based on the severity of azotemia, clinical condition, urine output, and biochemical parameters. Following haemodialysis, marked reductions in serum BUN and creatinine concentrations were observed, accompanied by correction of electrolyte imbalances and significant clinical improvement. The overall survival rate was 30%, with more favorable outcomes in dogs receiving early intervention, particularly those with acute kidney injury and toxin-induced nephropathy. Complications, including hypotension, catheter-related infections, and dialysis circuit clotting, were successfully managed through close monitoring and appropriate interventions. Furthermore, this study reports the development of novel indigenous haemodialysis cartridges specifically designed for canine and feline patients, representing the first veterinary-specific haemodialysis cartridges reported worldwide. These cartridges have the potential to improve treatment accessibility, reduce costs, and enhance the feasibility of haemodialysis in veterinary practice, representing a significant advancement in veterinary nephrology and critical care in India.

Keywords: *Haemodialysis, Small Animal Practice, Acute Kidney Injury, Chronic Kidney Disease, Veterinary Nephrology*

Granulosa Cell Tumor-Associated Cystic Endometrial Hyperplasia-Pyometra Complex Culminating in Multiple Organ Dysfunction in a Belgian Malinois: A Case Report

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Pyometra is a life-threatening reproductive disease in intact, middle-aged to older female dogs that can progress from localised uterine infection to septicaemia, systemic inflammatory responses, and multiorgan dysfunction. It frequently arises in the context of cystic endometrial hyperplasia (CEH) driven by hormonal imbalances, with concurrent ovarian pathologies including granulosa cell tumours (GCTs). This report describes the postmortem and histopathological findings in an 8-year-old intact female Belgian Malinois with a history of irregular oestrous cycles that died suddenly after exhibiting acute respiratory distress. Necropsy examination revealed a uterus distended with foul-smelling purulent exudate and a thickened endometrium bearing variable-sized cysts, with both ovaries containing multifocal firm nodules. Additionally, fibrinous peritoneal effusion, pulmonary consolidation, pericardial white foci, hepatic nutmeg appearance, and renal cortical lesions were observed. Histopathology confirmed the CEH-pyometra complex in the uterus, characterised by endometrial thickening, glandular proliferation with cyst formation, and stromal infiltration by inflammatory cells. The ovarian lesions were consistent with a GCT, comprising polyhedral vacuolated cells exhibiting anisocytosis and anisokaryosis. Systemic lesions included severe diffuse interstitial pneumonia with pulmonary oedema, centrilobular hepatic necrosis with hepatitis, suppurative myocarditis, leptomeningitis with cerebral oedema, perivascular cuffing and neuronal degeneration, glomerulonephritis, and suppurative pancreatitis which are collectively indicative of systemic inflammatory responses-driven multiorgan dysfunction. This case illustrates how an undetected GCT can lead to hormonal dysregulation, driving progression of the CEH-pyometra complex to fatal systemic inflammatory responses and multiorgan dysfunction. These findings describe the importance of early diagnosis, prompt surgical intervention, and vigilant systemic monitoring in managing pyometra. Furthermore, they highlight the need to routinely investigate concurrent ovarian neoplasia in affected animals, as overlooking such lesions may significantly worsen prognosis.

Keywords: *Granulosa Cell Tumour, Cystic Endometrial Hyperplasia-Pyometra Complex, Multiorgan Dysfunction*

Histopathological Evaluation of Intrahepatic Bile Duct Alterations in Dogs with Chronic Kidney Disease

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Chronic Kidney Disease (CKD) is a progressive and irreversible systemic disorder characterized by the gradual loss of functional nephrons. This ultimately leading to impaired renal function and multiple extra-renal complications. Among these systemic manifestations, hepatic involvement is significant due to the complex bidirectional interaction between the liver and kidneys. Histopathological hepatic alterations associated with CKD include hepatic steatosis, fibrosis and bile duct abnormalities. However, despite evidence supporting hepato-renal interactions, intrahepatic bile duct changes remain understudied in veterinary pathology. This study aimed to evaluate histopathological alterations of intrahepatic bile ducts in dogs with CKD and to compare these findings with those of healthy dogs. In addition, the relationship between the severity of renal lesions indicating chronicity and the degree of bile duct proliferation was assessed. Histopathological evaluation was performed on liver and kidney tissues from dogs diagnosed with CKD (n=10) and a healthy control (n=4). Renal lesions were graded using a scoring system, while intrahepatic bile duct alterations were semi-quantitatively assessed based on the degree of bile duct proliferation. Mann–Whitney U test was used to compare the degree of bile duct proliferation between CKD and healthy controls, whereas Spearman’s rank correlation was used to evaluate the relationship between severity of chronic renal lesions and degree of bile duct proliferation in CKD group. Dogs with CKD revealed significant bile duct proliferation compared with healthy controls ($p = 0.017$). Spearman’s rank correlation revealed a significant positive correlation between the severity of renal lesions indicating chronicity and the degree of bile duct proliferation ($p = 0.034$). This study demonstrated significant intrahepatic bile duct proliferation in dogs with CKD compared with the healthy controls. The significant positive correlation between severity of renal lesions and bile duct proliferation indicates a close association between CKD and hepatic biliary alterations. These changes may be associated with systemic effects of CKD including uremia, chronic inflammation and oxidative stress. Furthermore, these highlights the importance of considering the hepatic biliary involvement during pathological evaluation and integrated approach in clinical management of CKD.

Keywords: Chronic Kidney Disease, Intrahepatic Bile Duct Proliferation, Histopathology

Immunophenotypic Characterization of Lymphocyte Subsets in Sri Lankan Indigenous Cattle

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Sri Lankan indigenous cattle, also known as Batu Haraka (Indigenous Zebu; *Bos indicus*), are known to be resistant to infectious diseases such as babesiosis; however, their immunological reference values for lymphocyte subsets remain poorly defined. This study aimed to quantify CD14⁺ cells and T lymphocyte subsets (CD4⁺, CD8⁺, and $\gamma\delta$ T cells) in indigenous cattle to compare these parameters with those reported in the literature for Holstein Friesian cattle using flowcytometry without considering environmental and age effects. A total of 30 clinically healthy, unvaccinated, and extensively reared, naturally bred indigenous cattle aged 3 months to 6 years old in the Galle district were selected based on their phenotypic characteristics. Blood samples were collected via jugular venipuncture into EDTA tubes and transported at 4°C. Flow cytometry using fluorescently labeled antibodies (FITC, APC) was used to identify and quantify lymphocyte subsets. Additionally, differential white blood cell counts were performed on blood smears, along with total WBC count and PCV calculations. The mean proportions of CD4⁺, CD8⁺, CD14, and $\gamma\delta$ T cells were 12.84%, 7.07%, 0.12%, and 0.23%, respectively, with a CD4⁺/CD8⁺ ratio of 1.81. Comparative analysis using pooled t-tests demonstrated significantly lower CD4⁺ T cell levels in indigenous cattle (12.84 ± 2.11) compared to Holstein Friesian cattle (14.90 ± 3.67 ; $p < 0.00001$). In contrast, CD8⁺ T cell levels were significantly higher in indigenous cattle (7.07 ± 1.07) than in Holstein Friesian cattle (6.59 ± 2.00 ; $p = 0.022$). Comparatively, $\gamma\delta$ T cell proportions were markedly lower in indigenous cattle ($0.23 \pm 0.19\%$) compared to Holstein Friesian cattle ($6.98 \pm 5.74\%$), with a statistically significant difference ($p < 0.001$). Differential counts of monocytes and eosinophils were significantly higher in indigenous cattle compared to Holstein Friesian cattle. These findings indicate a distinct immunological profile in Sri Lankan indigenous cattle, characterized by relatively elevated cytotoxic T cell levels and reduced helper T-cell levels. This profile may be linked to the reported disease resilience of indigenous cattle, highlighting the need for further research to confirm this association. Establishing a baseline immunological parameter provide valuable insights for disease diagnosis, management, and future immunogenetic studies in indigenous cattle populations.

Keywords: Sri Lankan Indigenous Cattle, CD4⁺ T cells, CD8⁺ T cells, $\gamma\delta$ T cells, CD14 Cells

Molecular Characterization, Antimicrobial Resistance, and Virulence Profiling of *Staphylococcus aureus* Isolated from Bovine Mastitis Milk in the Western Province of Sri Lanka

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Mastitis is one of the most frequent and widespread diseases of dairy cattle in Sri Lanka. Among mastitis causing pathogens, *Staphylococcus aureus* can be considered as the leading cause of both subclinical and clinical mastitis. The pathogenic potential of *Staphylococcus aureus* is primarily associated with its invasiveness, biofilm-forming capacity, production of toxic virulence determinants, and antimicrobial resistance mechanisms. Therefore, current study aimed to characterize the *S. aureus* isolates and evaluates the multidrug resistance genes and virulence factors by PCR screening, recovered from both subclinical and clinical mastitis animal in Western province of Sri Lanka. A total of 75 samples were collected from 10 farms in each of the three districts using convenient sampling. All 75 samples were cultured on Blood Agar and Mannitol Salt Agar and suspected isolates were subsequently subjected to five standard biochemical tests (catalase, oxidase, coagulase, mannitol salt agar fermentation, and Voges-Proskauer) to confirm *S. aureus*. The biofilms formation ability was evaluated using crystal violet microtiter plate method. Isolates were confirmed as *S. aureus* by PCR using 16s rRNA. Antimicrobial susceptibility against five antimicrobials was evaluated by Kirby Bauer disc diffusion and virulence factors were assessed using specific gene markers (*hla*, *spa*, *nuc*). Out of 75 samples, 34 (45.3%) were confirmed as a *S. aureus* via biochemical testing. Subsequent antimicrobial susceptibility testing on 25 isolates revealed 0% resistant to Gentamicin, but alarming resistance rate for Cloxacillin (80%), Oxytetracycline (76%), Ceftriaxone (68%), Ampicillin (36%). Notably, 76% (19/25) of isolates exhibited multidrug resistance (MDR). Molecular characterization via PCR confirmed the presence of virulence genes (*hla*, *spa*, *nuc*) in all tested 8 samples. Biofilm assays of 32 isolates revealed that 12.5% of the isolates were significant biofilm producer, maintaining absorbance levels well above the 0.2nm margin. In conclusion, the study demonstrated a high prevalence of MDR *S. aureus* and virulence gene expression in bovine mastitis cases within the Western Province. High resistance to Oxytetracycline, Cloxacillin and Ceftriaxone may contribute to treatment failure and disease recurrence which is a critical challenge for animal health. This study emphasizes the urgent need for antibiotic stewardship and routine molecular surveillance in the region.

Keywords: Mastitis, Multidrug Resistance, *Staphylococcus aureus*, Virulence Factors

Fatal Parasitic Aortitis and Aortic Rupture Associated with *Spirocerca* sp. Nematodes in a Goat

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Aortitis refers to the inflammation of the aortic wall and parasitism is a rare aetiology. This case report describes a rare occurrence of parasitic aortitis associated with aneurysm, identified during the necropsy examination of a three-year-old, free-ranging, female, Saanen goat submitted from Galagedara, Kandy to the Department of Veterinary Pathobiology, Faculty of Veterinary Medicine and Animal Science, University of Peradeniya, following a history of sudden death. The goat was reared in close proximity to several dogs on the same premises. Prior to death, the animal had exhibited acute respiratory distress, weakness, and reduced activity. Gross necropsy examination revealed severe haemothorax characterized by the accumulation of large volumes of clotted blood within the thoracic cavity. Gross examination of the thoracic aorta demonstrated multiple raised irregular nodules and several aneurysms on the aortic lumen. A focal rupture of one aneurysmal segment was identified as the source of the fatal internal haemorrhage. Numerous red, wiry, coiled nematode parasites were observed embedded within the nodular lesions of the aortic wall. The affected aortic segments were markedly thickened, irregular, and firm, with multifocal areas of fibrosis, haemorrhage, and mineralization in gross examination, indicating chronic vascular injury and remodelling. The gross pathological findings were consistent with chronic parasitic aortitis resulting in aneurysm formation and aortic rupture. Based on the characteristic morphology and anatomical location of the parasites, the nematodes were strongly suggestive of a *Spirocerca* species. Although arteritis and aneurysmal lesions caused by *Spirocerca* sp. have been described in several domestic and wild animal species, such findings are exceedingly rare in goats. Furthermore, *Elaeophora schneideri*, a coiled filarial worm, has been reported in goats but is commonly found in carotid or maxillary arteries rather than the thoracic aorta. This case highlights the severe and potentially fatal vascular pathologies of aberrant nematode migration in small ruminants and further emphasizes the pathological significance of *Spirocerca* sp., which is classically associated with dogs but may occasionally induce devastating vascular lesions in atypical hosts. Therefore, parasitic aortitis should be considered as a rare differential diagnosis in cases of sudden death associated with haemothorax and vascular rupture in goats.

Keywords: Aberrant Migration, Aneurysm, Aortitis, Goats, Nematode

Molecular Detection and Epidemiological Assessment of Major Tick-Borne Haemoparasites in Cattle from Five Veterinary Ranges of Uva Province, Sri Lanka

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Tick-borne haemoparasitic diseases remain a major constraint to cattle health and productivity in Sri Lanka. This cross-sectional study investigated the molecular prevalence of *Theileria orientalis*, *Anaplasma marginale*, *Babesia bigemina*, and *Babesia bovis* in cattle from five Veterinary Ranges of Uva Province (Girandurukotte, Rideemaliyadda, Mahiyanganaya, Monaragala, and Okkampitiya). A total of 100 cattle blood samples from healthy cattle were examined by microscopy and polymerase chain reaction (PCR). Haematological parameters and host-associated risk factors (age, sex, and breed) were analysed using IBM SPSS Statistics, multivariable logistic regression, and Fisher's Exact Test. PCR detected *T. orientalis* in 58% (95% CI: 48.2–67.3), *A. marginale* in 54% (44.2–63.5), *B. bigemina* in 31% (22.1–40.9), and *B. bovis* in 15% (8.8–23.4) of cattle. In comparison, microscopy identified *T. orientalis* in 25%, *B. bigemina* in 7%, and *B. bovis* in 3% of samples, while *A. marginale* was not detected. These findings demonstrate the substantially greater sensitivity of PCR for identifying subclinical carrier animals and support its application in epidemiological surveillance. District-level comparisons demonstrated significant geographical variation in parasite prevalence. *Theileria orientalis* (85.0% vs. 40.0%; $p < 0.001$) and *Anaplasma marginale* (80.0% vs. 36.7%; $p < 0.001$) were significantly more prevalent in Monaragala than in Badulla, whereas *Babesia bovis* was significantly more prevalent in Badulla (23.3% vs. 2.5%; Fisher's Exact Test, $p = 0.0038$). No significant district difference was observed for *Babesia bigemina* ($p = 0.171$). These findings suggest possible influences of local ecology, tick vector distribution, and management practices, although larger epidemiological studies are required to confirm these geographical patterns. Multivariable logistic regression showed that Local cattle had significantly lower odds of *A. marginale* infection than Jersey cattle (adjusted OR = 0.15, 95% CI: 0.02–0.91; $p = 0.039$). Age and sex were not significantly associated with *A. marginale* infection, and no independent host-level risk factors were identified for *T. orientalis* or *B. bigemina*. Logistic regression could not be performed for *B. bovis* because no male cattle were PCR-positive. Fisher's Exact Test demonstrated a significant association between Friesian cattle and *B. bovis* infection ($p = 0.033$); however, this finding should be interpreted cautiously because of the limited sample size. No significant haematological alterations were detected. Nevertheless, infected cattle tended to exhibit slightly increased mean corpuscular volume (MCV) and mean corpuscular haemoglobin (MCH), together with reduced mean corpuscular haemoglobin concentration (MCHC), particularly in *T. orientalis* and *A. marginale* infections.

Keywords: Cattle, Haemoparasites, Sri Lanka, Uva Province

Hemoparasites in Backyard Chickens in Sri Lanka: Morphological Detection, Molecular Confirmation and Occurrence across Agro-Ecological Zones

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Backyard poultry is an important component of Sri Lankan livestock sector and contributes significantly to rural livelihoods. However, backyard flocks may act as reservoirs of infectious agents with potential implications for nearby commercial poultry farms. Hemoparasites, being vector-borne, are ideal indicators of this risk. This study aimed to determine the occurrence, genus-level diversity and co-infection patterns of hemoparasites in backyard chickens across major poultry-producing areas in Sri Lanka. A cross-sectional study was conducted in seven districts (Kurunegala, Colombo, Gampaha, Puttalam, Kandy, Polonnaruwa and Rathnapura) across 10 veterinary divisions, collecting 151 blood samples from 50 farms (three birds per farm). Leishman-stained blood smears were examined morphologically for genus-level identification of hemoparasites. Representative positives from each genus were further analyzed by PCR and Sanger sequencing targeting the *filaria* LSU, *Trypanosoma* SSU, *Plasmodium* mitochondrial non-coding regions, and *Leucocytozoon* cytochrome c oxidase subunit 1 (COX1) gene of mtDNA. The study found a 74.17% hemoparasite occurrence in backyard chickens, with 19.21% co-infections. Genus-level detection rates were 53.64% for *Plasmodium*, 23.84% for *filaria*, 14.57% for *Leucocytozoon*, and 3.31% for *Trypanosoma*. Occurrence of hemoparasitism was higher in the dry (78.43%) and wet (73.02%) zones of Sri Lanka compared to the intermediate zone (70.27%). The most common co-infection involved *Plasmodium* and *Filaria*, accounting for 9.93% of cases. Anaemic status based on hematocrit was not significantly associated with hemoparasite detection. Molecular methods confirmed the genera of *Plasmodium*, *Leucocytozoon*, *filaria*, and *Trypanosoma*, and the amplicons were sequenced to explore phylogenetic relationships with regional pathogens. The findings indicate that clinically healthy backyard chickens in major poultry-producing areas of Sri Lanka commonly harbour hemoparasites. Further studies are needed to determine their clinical impact, vector ecology, and potential transmission risk to commercial poultry.

Keywords: *Chicken, Hemoparasites, Morphology, Occurrence, Co-infection*

Beta Coronaviruses of the *Nobecovirus* and *Hibecovirus* Subgenera in Bat Faecal Samples from a Public Entertainment Site in the Central Province of Sri Lanka

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Bats are an important natural reservoir for numerous coronavirus (CoV) lineages. Understanding the circulation of CoVs within bat populations is therefore important for assessing the potential zoonotic risks, particularly in environments where human–bat interactions occur. Public entertainment sites, especially urban green spaces, can serve as shared habitats that bring bats into proximity with people, creating opportunities for viral spill-overs. In Sri Lanka, although bats are abundant and ecologically important, surveillance of CoVs in bat populations, especially in highly accessible public settings, remains limited. This study investigated the presence of CoV in bat faeces collected from a public green space in the Royal Botanical Gardens (RBG), Peradeniya, Central Province of Sri Lanka, to identify the local CoV diversity and to understand the public health implications if any. Sampling was done between July 2022 and April 2024 from the RBG, Peradeniya, a place where fruit bats *Pteropus giganteus* roost most of the year. Bat guano (faecal dropping) was collected once a week in the mornings by laying out polythene sheets (2m x 2m), the previous day afternoon, under randomly selected trees in the bat roosting area. Viral RNA was extracted using the SpinStar™ Viral Nucleic Acid Kit (ADT Biotech, Malaysia) as per manufacturer's instructions. The extracts were subjected to a pan-coronavirus (PanCoV) nested RT-PCR targeting a 442-base-pair fragment within the highly conserved region of the RNA-dependent RNA polymerase gene in the *Orthocoronavirinae* sub-family. The 442-base-pair fragment was sequenced by the Oxford Nanopore Technologies (ONT) on a MinION Mk1B device using the Rapid ONT Barcoding Kit for 96 library preparation. Of the 224 bat faecal samples tested, 29.02% (65/224) were positive for pan CoV nested RT-PCR. Of the 65 CoV positive samples, 62 were successfully identified as bat CoV by the partial ONT sequencing. All 62 sequenced samples are beta CoVs. A total of 59 and 3 beta CoVs belong to *Nobecovirus* and *Hibecovirus* subgenera, respectively. The results indicate 29.02% (65/224) positivity for bat CoV at the study site, and these bat CoVs belong to the beta CoV. These findings are in agreement with the previous findings on bat CoV reported in *Pteropus giganteus* bats in other South Asian countries.

Keywords: Coronaviruses, Bats, PanCoV Screening, Sri Lanka

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Antimicrobial Resistance Patterns and Extended Spectrum β -Lactamase Producing *Escherichia coli* in Waterers: A Study Conducted in Commercial Layer Farms in Kurunegala District, Sri Lanka

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Antimicrobial resistance (AMR) is an emerging global health threat. Gram-negative bacteria, particularly *Escherichia coli* (*E. coli*), contribute to the dissemination of antimicrobial resistance. One of the major resistant types of *E. coli* is Extended-Spectrum β -Lactamase (ESBL)-producing strain, which confers resistance to β -lactam antibiotics. The most common ESBL coding genes are *bla*_{TEM}, *bla*_{SHV}, *bla*_{CTX-M}, which are typically carried on plasmids. Poultry production systems, especially layer farms, are recognized as important reservoirs of resistant bacteria and contribute to the spread of AMR to humans through contaminated animal originated food, direct contact and environmental exposure. In Sri Lanka, limited information is available regarding ESBL producing *E. coli* in poultry layer farm environments. Therefore, this study investigated the antimicrobial resistance profiles and the presence of ESBL coding genes in *E. coli* isolates recovered from commercial layer farms in the Kurunegala District. Thirty *Escherichia coli* isolates that have been isolated previously from the waterers of 30 commercial chicken layer farms and stored at -80 °C, were recovered on nutrient agar. Antimicrobial susceptibility testing (AST) was performed using the Kirby-Bauer disk diffusion method against five selected antibiotics. The isolates were subsequently screened for ESBL production according to CLSI 2020 guidelines. Potential ESBL-producing isolates were further analysed genotypically for the presence of ESBL coding gene: *bla*_{TEM} using Polymerase Chain Reaction (PCR). For quality control, an ESBL-positive *Klebsiella pneumoniae* isolate (ATCC 700603), previously characterized known ESBL positive isolate and an ESBL-negative *E. coli* isolate (ATCC 25922) were used. AST revealed higher levels of resistance to tetracycline (71%), followed by amoxicillin-clavulanic acid and trimethoprim/sulfamethoxazole (50% each). Approximately 5% resistance was observed for meropenem, while all isolates were susceptible to gentamicin. During ESBL screening, 14 out of the 30 isolates (46.67%) were identified as potential ESBL producers. PCR analysis showed that all screened isolates were positive for *bla*_{TEM} gene. Phenotypic confirmation of the isolates and further investigations to determine the presence of multiple ESBL genes are being carried out. Presence of *bla*_{TEM} positive isolates and high antimicrobial resistance levels suggests the potential of resistance gene dissemination, emphasizing the need for continued AMR surveillance and responsible antimicrobial use.

Keywords: ESBL, Antimicrobial Resistance, *E. coli*, *bla*_{TEM}, Public Health

Evaluation of Alternative Blood Plasma Sources for the Coagulase Test to Detect *Staphylococcus aureus* and Methicillin-Resistant *Staphylococcus aureus*

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Methicillin-resistant *Staphylococcus aureus* (MRSA) remains a major global public health threat. The coagulase test is a reliable method for identifying pathogenic *Staphylococcus aureus*, consisting of the slide test and the tube test. The tube coagulase test is considered more robust and is used to validate isolates that test negative in the slide coagulase test. Rabbit plasma used in the standard coagulase test has several limitations, including limited availability, low blood volume per animal, and the need for specialized care during blood collection. Therefore, this study evaluated locally available alternative plasma sources suitable for easy sampling and large-volume collection for the coagulase test. Cattle, buffalo, goat, dog, and human plasma were evaluated as alternatives, with rabbit plasma serving as the positive control. Ethylenediaminetetraacetic acid (EDTA) and citrate blood were used from each animal type tested. Two animal-origin MRSA isolates, one human-origin MRSA isolate, one animal-origin *S. aureus* isolate, one human-origin *S. aureus* isolate, and *Escherichia coli* (negative control) were used in this study. The slide test was performed in triplicate and the tube coagulase test in duplicate to ensure reproducibility. In both the slide and tube tests, *E. coli* remained negative with all plasma types tested. In the slide test, all MRSA and *S. aureus* isolates were positive with both rabbit plasma types, and rabbit plasma formed strong and stable clot in the tube test. Cattle citrate, cattle EDTA, buffalo EDTA, goat EDTA, dog EDTA, and human citrate plasma were positive in the slide test for all MRSA and *S. aureus* isolates. However, in the tube test, they produced strong, stable clots for some of the isolates compared with rabbit plasma. Furthermore, strong and stable clot formation was observed with buffalo citrate and goat citrate plasma for all MRSA and *S. aureus* isolates. However, goat citrate plasma failed to detect bound coagulase in the slide test but detected free coagulase in the tube test. Nevertheless, buffalo citrate plasma successfully detected both bound and free coagulase, comparable to rabbit plasma, suggesting that it is a reliable, locally available alternative plasma source for the coagulase test. Further studies with a larger and more diverse collection of clinical isolates are warranted to validate these findings.

Keywords: *Staphylococcus aureus*, Methicillin-resistant *Staphylococcus aureus* (MRSA), Coagulase Test, Rabbit Plasma, Alternative Plasma

Isolation and Characterization of Lytic Bacteriophages from Sewage and Wastewater Targeting *Escherichia coli* and *Staphylococcus aureus* Reference Strains

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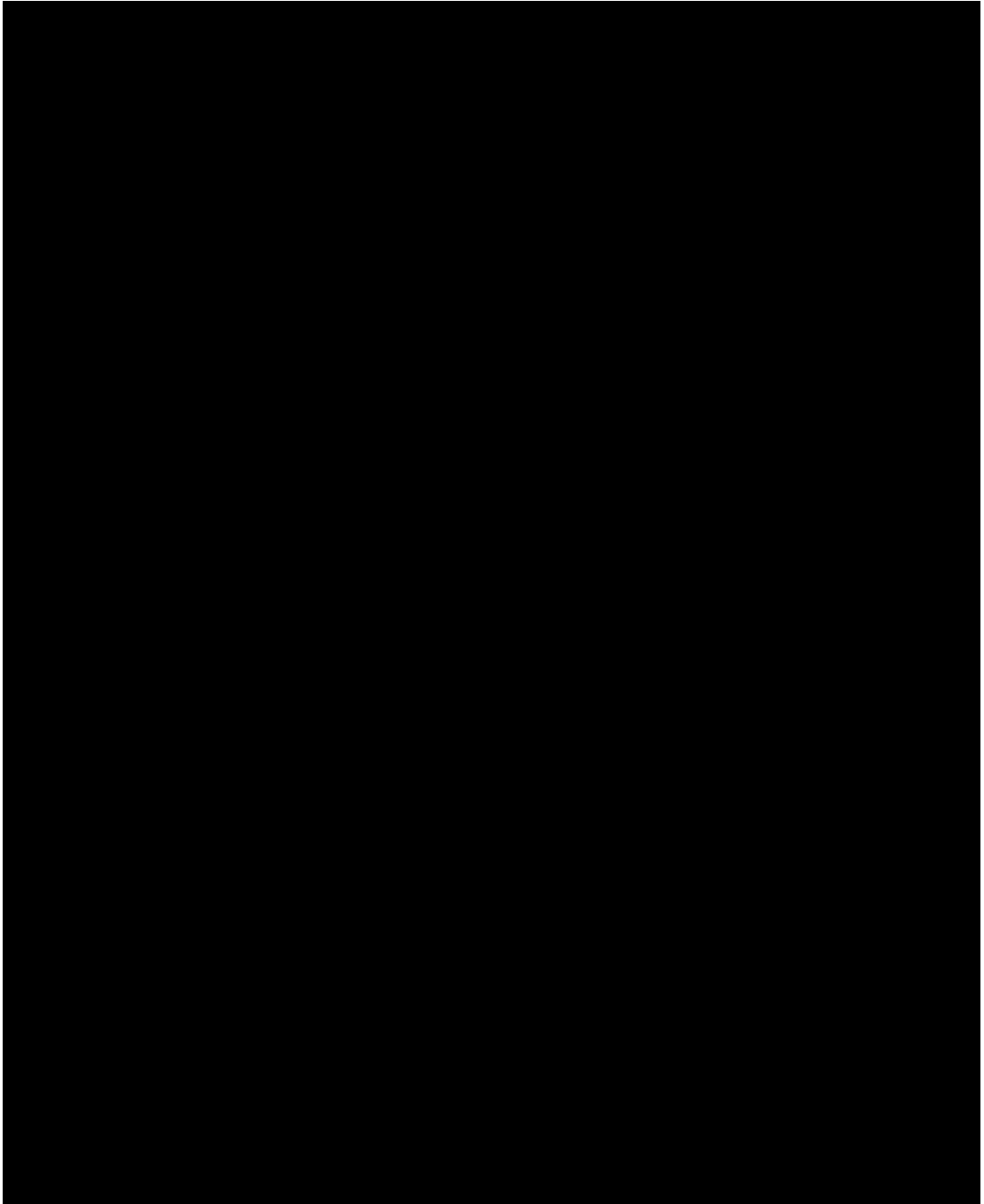
The rapid emergence of multidrug-resistant (MDR) bacteria has created an urgent need for alternative strategies for antimicrobial drugs. Bacteriophages, which are viruses that specifically infect and lyse bacteria, have re-emerged as powerful complementary tools in the fight against the rise of multidrug resistance. This is largely due to their high host specificity, self-replicating nature, and ability to target antibiotic-resistant bacterial pathogens. In this study, bacteriophages were isolated from environmental sources, including sewage and wastewater samples collected from a water treatment plant in Kandy District, using *Escherichia coli* (*E. coli*; ATCC 25922) and *Staphylococcus aureus* (*S. aureus*; ATCC 25923) as host strains. The samples were pre-treated through centrifugation and filtration, followed by enrichment, and subjected to exponential growth in susceptible *E. coli* or *S. aureus* host cultures to promote phage amplification. Bacterial lysates were screened for lytic activity through a spot test and plaque assay. In these assays, phage suspensions were applied to bacterial lawns prepared with 0.7% Nutrient agar overlays and incubated at 37 °C for 24 hours. The presence of clear and turbid lytic zones observed in both tests confirmed the successful isolation of viable lytic bacteriophages active against the respective host strains. Additionally, the antimicrobial susceptibility test of the host bacteria was performed using different antimicrobials, and the diameters of the inhibitory zones caused by these antimicrobials were compared to the diameters of the clear zones observed with the isolated bacteriophages for each host bacterium. These findings demonstrated the successful isolation of lytic bacteriophages from the above environmental sources and highlight their potential as alternative or complementary antimicrobial agents in the fight against MDR. Further studies, including host range determination, genomic characterization, lytic efficiency, formulation stability, and in vivo validation, are required to evaluate the safety, efficacy, and applicability of these phages in clinical, veterinary, and agricultural settings.

Keywords: *Bacteriophages, Antimicrobial Resistance; AMR, Escherichia coli; Staphylococcus aureus, Spot Assay, Alternative Antimicrobials*

Feline Rabies Transmission Dynamics in Sri Lanka: An Emerging and Understudied Public Health Threat

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Detection and Antimicrobial Resistance Profile of *Escherichia coli* and *E. coli* O157:H7 in Fresh Chicken Samples from Wet Markets in Kandy District, Sri Lanka

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Poultry meat can be contaminated with *Escherichia coli* (*E. coli*) and its pathogenic variants during slaughter and processing. Shiga toxin-producing *E. coli* (STEC) particularly serotype O157:H7, is a major foodborne pathogen associated with severe clinical outcomes, including hemorrhagic colitis (HC) and hemolytic uremic syndrome (HUS). Despite the high consumption of poultry meat in Sri Lanka, systematic data on *E. coli* and *E. coli* O157:H7 (EOH) in poultry meat remain limited. This study aimed to investigate the presence and antimicrobial resistance profile of *E. coli* and EOH in fresh chicken samples from wet markets in Kandy district to address these regional surveillance gaps. A total of 45 samples (15 neck, 15 gut, and 15 liver samples) were randomly collected from 15 chickens between February 2026 and April 2026. Following pre-enrichment, samples were cultured on selective media including Cefixime-Tellurite Sorbitol MacConkey (CT-SMAC) agar. Further characterization was performed using microscopic and standard biochemical tests. All suspected *E. coli* and EOH isolates were analyzed by polymerase chain reaction (PCR) using primers targeting the *16s rRNA* of *E. coli* and the *eaeA* and *fliC_{H7}* genes, which are characteristic markers of EOH. Antimicrobial resistance profiles were determined against eight antibiotics using the Kirby-Bauer disk diffusion method. *E. coli* ATCC 25922 and a previously characterized EOH isolate served as positive controls. Out of 45 samples, 32 (12 neck, 12 gut, 8 liver) (71.11%) and 2 (1 gut, 1 liver) (4.44%) isolates were phenotypically positive for *E. coli* and EOH, respectively. Genotypically, 30 isolates (11 neck, 11 gut, 8 liver) (66.67%) were positive for *E. coli*, while no isolates were confirmed as EOH. Of these positive samples, one (2.22%) liver isolate was confirmed to be an H7-positive despite being negative for O157. Most *E. coli* isolates exhibited high resistance to tetracycline (86.67%), ampicillin (83.33%), sulfamethoxazole (63.33%), ciprofloxacin (50%), while lower resistance was observed for streptomycin (20%), ceftriaxone (6.67%), and gentamycin (3.33%). Notably, [76.67% (23/30)] of *E. coli* isolates displayed distinct multidrug resistance (MDR) patterns. These findings demonstrate the presence of antibiotic-resistant *E. coli* in poultry meat from wet markets in Kandy, posing a significant public health concern.

Keywords: CT-SMAC, *E. coli* O157:H7, Multidrug Resistance, Poultry, STEC

Acknowledgements: University Research Grant (URG/2023/36/V)

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

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

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

Acknowledgements: University Research Grant (URG/V/2019-60)

Study on Aflatoxin (B1 and B2) Contamination in Local and Imported Maize Used in Poultry Feed in Sri Lanka

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Aflatoxins are considered as the most critical type of mycotoxin due to their high toxicity. Aflatoxin contamination is an important concern in maize, which is the major poultry feed ingredient in Sri Lanka and sourced through both local and imports. Maize is the main energy source in diets for broilers and layers. The presence of aflatoxins B1 and B2 in maize poses a significant threat to the health and productivity of poultry. This study aims to: (1) quantify and compare aflatoxin levels in both local and imported maize, (2) compare the aflatoxin levels in both broiler and layer feed manufactured using local and imported maize (3) analyze the nutritional composition of ash, protein, fat, sugar, starch, moisture, and fiber of maize to investigate any correlation on aflatoxin levels of maize from two sources. Based on a single-step lateral flow immunochromatographic assay on a competitive immunoassay format, comprising of 108 convenient samples of local maize (n = 20), imported maize (n = 38), layer feed (local maize, n = 5; imported maize, n = 10) and broiler feed (local maize, n = 15; imported maize, n = 20) were analyzed. Analysis of nutritional parameters were done by near-infrared reflectance spectroscopy. Aflatoxin levels were compared using pairwise comparisons of the generalized linear model procedure by using the least significant difference as the post hoc test. Correlations among aflatoxin levels and selected nutritional parameters were assessed by using Spearman's correlations. The results indicate that significantly higher ($p < 0.0001$) levels of aflatoxin in the local maize (117.3 ± 15.0 ppb) and poultry feeds (layer, 31.6 ± 12.5 ppb; broiler, 40.1 ± 6.0 ppb) compared to the imported maize (22.8 ± 3.9 ppb) and poultry feeds (layer, 5.7 ± 0.9 ppb; broiler, 10.8 ± 1.7 ppb) showing the risk of aflatoxin contamination in the poultry feeds with local maize, which can adversely affect the health and the productivity of the animals. The correlations between the nutritional parameters and the aflatoxins levels were not statistically significant. In conclusion, aflatoxin contamination was common in local maize and feeds manufactured using local maize, showing that regular monitoring is important to enhance the health and productivity of poultry in Sri Lanka.

Keywords: Aflatoxin, Broiler, Imported Maize, Layer, Local Maize

Comparison of Nutritional Composition, Grading Quality and Aflatoxin Levels in Locally Produced vs Imported Maize Used for Animal Feed Production in Sri Lanka

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Maize (*Zea mays* L.) is the most widely used feed ingredient and serves as the primary energy supplement in poultry nutrition worldwide. The quality of feed produced in Sri Lanka is regulated by the Animal Feed Act, and ensuring the safety and consistency of both local and imported maize is essential for maintaining animal feed standards. This study assessed the nutritional quality (physical characteristics and nutrient composition), safety and aflatoxin contamination of maize from Sri Lanka's Yala and Maha seasons versus imported maize. Local maize was collected in Anuradhapura, Mahiyangana and Ampara regions and imported maize were collected at Animal Quarantine Station, Colombo during clearing of consignments. A total of 58 (Yala n= 18, Maha n= 20, imported n=20) samples were analyzed in single determinations and data were analyzed using one-way ANOVA in Minitab 2017 to assess differences among sample groups. Mean values of foreign materials and bulk density differed significantly ($p \leq 0.05$) among three groups, reflecting variations in post-harvest drying and cleaning practices. Proximate composition values of maize across all three groups ranged from 9.3%-15.3% (moisture), 7.2%-13.2% (crude protein), 0.6%-1.6% (ash), 1.7%-6.3% (crude fiber), 2.3%-6.1% (ether extract) and 67.2%-75% (Nitrogen Free Extract). Gross energy and aflatoxin levels ranged from 3615Kcal/kg to 3890Kcal/kg and from 0 to 10.3ppb, respectively. Statistically significant differences were identified in the mean values of moisture, ash, crude fiber, gross energy and aflatoxin content ($p \leq 0.05$). The mean aflatoxin concentrations across all samples were below the maximum permissible threshold of 20 ppb, thereby confirming its suitability for use as animal feed. Nevertheless, aflatoxin levels varied significantly among groups ($p \leq 0.05$), with comparatively higher concentrations detected in maize harvested during the Maha season. A strong positive correlation was observed between moisture content and aflatoxin concentrations in maize from the Yala season. Mineral analysis showed phosphorus and magnesium levels consistent with standard references, while calcium, zinc, and copper concentrations were comparatively higher in local maize. Locally produced maize is nutritionally comparable to imported maize and suitable for animal feed through variability in moisture content, physical quality parameters, and aflatoxin concentrations emphasizes the need for improved post-harvest practices to ensure feed safety and quality.

Keywords: Aflatoxin, Maize, Nutrient Composition

African Swine Fever Recovery Strategies: Restocking, Biosecurity, and ASFV Surveillance in the Kosgama VS Range

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The first African swine fever outbreak occurred in September 2024 in Sri Lanka. This outbreak resulted in the loss of nearly 70,000 pigs during the period from October 2024 to January 2025, including the majority from the western Province. Around 6,000-8,000 pigs died in the Kosgama veterinary range, which had the highest pig population in the Colombo District. The swine farmers restarted piggery farming approximately 4-5 months later. One of the main challenges was finding healthy breeding stock. This study describes the recovery strategies, biosecurity measures and ASFV surveillance implemented during swine farm restocking in the Kosgama Veterinary range, following the first ASF outbreak subsequent recovery efforts undertaken. Control measures included improving farm biosecurity and discontinuing swill feeding. The Western Provincial Department of Animal Production & Health (WP-DAPH) initiated a program to improve biosecurity by introducing biosecurity standards to promote the restocking of piggery farms for combating ASF, along with other economically important killer diseases. Once farmers established the required biosecurity standards, WP-DAPH screened newly introduced pigs for ASFV during restocking after the farm evacuation due to the ASF outbreak. A total of 495 whole blood samples collected from 17 farms were screened for ASFV by Polymerase Chain Reaction (PCR), conducted by the faculty of Veterinary Medicine & Animal Science. In total, 39 samples count of 495 were positive for ASFV, and those were removed with farmer awareness. 2 farms that retained pigs surviving the ASF outbreak tested negative for ASFV. Textbooks indicate that pigs surviving or exposed to ASF can become lifelong carriers with intermittent viral shedding occurring over a 21-day period. This screening was conducted only once and could not be repeated after 21 days. Therefore, the negative results may be due to the nature of intermittent shedding. The range veterinary surgeon (VS) continuously monitors the 17 farms without any major health issues. Those farmers use formulated feed instead of swill as one of the standards of WP-DAPH. The implementation of enhanced biosecurity measures and PCR based surveillance supported the swine farm restocking process. The detection of ASFV positive animals during restocking highlights the importance of continued surveillance and monitoring.

Keywords: African Swine Fever, Biosecurity, Restocking, PCR, Swill Feeding, Pig Farming

Evaluation of Small-Scale Poultry Layer Farm Development Project

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In 2023, the Livestock Division of the Ministry of Agriculture implemented a small-scale poultry layer farm development project with government financial support to enhance household nutrition and provide income-generating opportunities for low-income families. Under this project, 3,778 beneficiaries were selected based on predetermined criteria through government veterinary offices. Each beneficiary was provided with 10/15, one-month-old layer birds along with technical guidance. To evaluate the impact of the project, a comprehensive study was conducted from March 2024 to July 2025 using a structured questionnaire administered through regional Veterinary Surgeons and Livestock Development Instructors. Information was collected from 2,405 beneficiaries, representing 63.7% response rate, and the data were analyzed using Microsoft Excel. The analysis revealed significant regional variations in production and consumption. The Central Province recorded the highest average output, with 55.61 ± 0.96 eggs per week/household, while North Central Province recorded the lowest, with 20.8 ± 0.81 eggs. However, production in Southern, Uva, Sabaragamuwa, and Northern Provinces were 47.52 ± 0.86 , 47.35 ± 0.55 , 45.56 ± 0.45 , 45.79 ± 0.36 per week respectively. Household egg consumption varied from a minimum of 8 eggs per week in Northwestern Province to a maximum of 18 eggs per week in Southern and Northern Provinces. According to the collected data average household size was 4 and this equates to a per capita consumption of 2 to 4.5 eggs per week. Notably, the data indicated that egg sales consistently exceeded household consumption figures in all provinces, suggesting that beneficiaries prioritized income generation over family nutrition. Overall, 88% of respondents reported satisfaction with the project. The evaluation revealed that the project achieved its immediate objectives of improving household protein intake and providing marginal income. However, the current model faces significant challenges, as the revenue generated is insufficient to sustainably support both family nutrition and household economy. Therefore, new strategies are required to address the actual needs of beneficiaries in the implementation of similar programs. Furthermore, the sustainability of small-scale extensive or semi-intensive poultry systems remains questionable, as they often lack the biosecurity infrastructure necessary to mitigate disease risks to the wider commercial poultry industry. Consequently, future small-scale poultry projects should be implemented away from commercial poultry farming areas.

Keywords: *Egg Consumption, Layer, Poultry Production, Protein Intake, Small Scale Poultry*

Acknowledgements: Provincial Department of Animal Production and Health

Trends of Artificial Insemination and Calving Outcome in the Northern Province of Sri Lanka: A Retrospective Study 2024-2025

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In the Northern Province of Sri Lanka, cattle rearing is an important livelihood activity predominantly practiced under small-scale semi-intensive management systems, with traditional cattle breeds characterized by relatively low productivity. Artificial insemination (AI) plays a vital role in genetic improvement, disease control and productivity enhancement by enabling smallholder farmers to access superior germplasm without the cost and biosecurity risks associated with maintaining breeding bulls. Through government veterinary services, AI facilitates the gradual genetic improvement of indigenous cattle populations toward higher-yielding crossbred animals using deep-frozen semen supplied by the Artificial Insemination Centre, Kundasale. The objective of this study was to evaluate AI performance and calving outcomes in the Northern Province during 2024-2025. Data were obtained from the Department of Animal Production and Health records and analyzed using descriptive statistical methods. At the provincial level, AI coverage increased by 6.3% from 2024 to 2025, while reported calvings increased by 20.3%, and conception rate improved from 17.2% to 19.4%. District-wise analysis showed that Jaffna accounted for 66.7% of AI coverage with 15-17% reported calvings, whereas Mannar recorded the lowest AI coverage (0.9%) but reported calvings ranged between 21-39%. The observed improvements may be associated with strengthened field services, increased availability of trained inseminators, enhanced farmer awareness, and supportive interventions including nutritional supplementation programs implemented by the Department of Animal Production and Health. However, compared with recommended benchmarks for efficient AI programmes, the results indicate scope for further improvement in reproductive performance. Key areas for enhancement include heat detection, follow-up services, record keeping, nutritional management, and technical capacity of inseminators. Although the study is limited by reliance on field records and the absence of detailed data on animal-level and management factors such as breed, age, health status, and timing of insemination, it demonstrates a positive trend in the expansion and performance of AI services in the Northern Province during 2024 -2025.

Keywords: Artificial Insemination, Calving, Cattle Conception Rate, Northern Province

Socioeconomic Aspects, Farmers' Knowledge and Actual Practices in Dairy Farming in Thalathuoya Veterinary Range, Kandy District, Sri Lanka

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An interview questionnaire-based study was conducted to investigate dairy farming in the Thalathuoya veterinary range in Kandy District. The aim of this study was to investigate the socioeconomic aspects, evaluate the level of farmers' knowledge, and examine the actual dairy farming practices in the Thalathuoya Veterinary Range of the Kandy District, Sri Lanka. The questionnaire was pre-tested, and the sample size consisted of 150 small-scale dairy farmers in Thalathuoya veterinary range. The questionnaire addressed several criteria related to dairy production and consisted of 29 questions, each containing three sub-questions for targeting farmers' knowledge on dairy farming, their actual practices, and their justifications for these practices. Responses were quantified using a study-specific scoring system. Collected data were entered, coded, and summarized in Microsoft Excel, and selected parameters were compared across groups using chi-square analysis. Results indicated that dairy farming was male dominated, comprising 71% of the surveyed sample. Most dairy farmers were middle to old-aged, with a mean age of 54 ± 0.94 years. The majority had an education level below GCE O/L. Having more than three milking cows on the farm was significantly associated with a monthly income exceeding Rs. 50,000 ($P < 0.05$). The average daily milk yield per cow was 5.87 ± 0.22 L. Breed significantly influenced the milk production, with European purebreds yielding more milk than European crossbreds ($P < 0.05$). There was no significant difference in knowledge scores between male and female farmers, and farmers' knowledge did not have a direct effect on the average per cow milk production. However, knowledge scores were significantly associated with practice scores, and these practice scores were higher among male farmers. A positive correlation was observed between practice scores and milk production per cow. Feeding chopped grass and concentrated feed significantly increased the per cow milk production, depending on the cow's production level. Ad libitum water availability significantly increased the per cow production. Majority of farmers did not cull cows even after five lactations. In conclusion, the farmers' knowledge score did not directly affect dairy production outcomes, at its current level of operation. Effective on-farm practices such as proper nutrition and feeding, and ad libitum access to water contributed to enhanced milk production. This study revealed that farmers' knowledge of dairy farming practices had an indirect positive effect on dairy production through the practice score.

Keywords: *Dairy Farming, Farmers' Knowledge, Milk Production, On-farm Practices, Socio-Economic Aspects*

Impact of Veterinary Data Information System on Service Delivery in Department of Animal Production and Health, North Central Province, Sri Lanka

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Digitalization has played an important role in the public sector in developing countries where promptly accessible precise information is essential for quick decision-making and efficient service delivery. In the livestock sector, accurate data is essential for disease surveillance, planning of production, resource allocation, and extension works. In order to minimize inefficiencies associated with manual paper-based recording systems, the Department of Animal Production and Health (DAPH) introduced the Veterinary Data Information System (VDIS) to improve accuracy, transparency, and responsiveness of extension officers at field level. Although, DAPH of the North Central Province (NCP) has been provided with digital infrastructure with a considerable investment, VDIS is underutilized. For example, only 27.9% out of 45399 registered livestock farms have been digitally recorded by 2025. This study evaluates the impact of VDIS on DAPH service delivery, focusing on four key variables: technical capacity, administrative capacity and, digital competency of the users, and system integration. Technical Capacity indicates the speed, user-friendliness, connectivity(offline), multilingualism and availability of technical support. Administrative Capacity is meant by monitoring attendances, accountability, accuracy, decision making and reporting. Digital Competency measures training, digital literacy, preference of digital entry and availability of digital tools. System Integration is a linkage between databases, registries, and offices. The study followed a positivist philosophy and deductive approach, using a mono-method quantitative design. Primary data were collected through a structured questionnaire administered to 81 officers in 29 government veterinary offices in NCP. Data were analysed using SPSS 22 to examine the service delivery as the dependent variable. Findings of the study showed strong positive correlations between service delivery and administrative capacity ($r=0.7$), technical capacity ($r=0.6$), digital competency ($r=0.5$), and system integration ($r=0.4$). Regression analysis indicated that administrative capacity ($\beta=0.416$) and digital competency ($\beta=0.274$) are the strongest variables of service delivery, while technical capacity is marginally significant. System integration influences service delivery with the combination of other variables. The educational level of the respondents also significantly affects service delivery initiatives. The study concludes that improvements in administrative support, digital skills, technical capacity, reliability, and database connectivity are essential for maximizing information system performance.

Keywords: Digitalization, Service Delivery, Administrative Capacity, Digital Competency

Rabies Outbreak in Dairy Heifers Associated with Stray Dog Exposure in a Dairy Farm Located in Kurunegala District

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Rabies is a zoonotic viral disease causing nearly 100% fatality in all warm-blooded mammals. Rabies outbreaks in cattle result in substantial economic losses to dairy farmers and pose serious public health risks due to potential human exposure. This report describes a rabies outbreak associated with suspected rabid stray dogs in the heifer unit of a medium-scale, semi-intensive dairy farm in the Kurunegala District, Sri Lanka, between 28 March and 06 May 2026. Epidemiological information was obtained through on farm investigations, while clinical data were collected via thorough evaluation of affected animals admitted to the Farm Animal Veterinary Teaching Hospital, Faculty of Veterinary Medicine and Animal Science. The affected unit, located separately from the main farm, housed 80 Girolando crossbred heifers grazed in nearby grasslands for 7–8 hours daily. Farm workers had observed stray dogs showing clinical signs suggestive of rabies in the grazing areas. Inadequate perimeter fencing may have facilitated the entry of stray dogs into the unit, several of which were observed during field investigations. Five heifers aged between 4 months, and 2.5 years developed acute neurological signs and died within 2–3 days of onset over a five-week period, resulting in an attack rate of 6.2% and a case fatality rate of 100%. Clinical signs included hyperesthesia, anorexia, dysphagia, continuous vocalization, aimless wandering, dullness, weakness, recumbency, paddling limbs and paralysis prior to death in deferent degrees in affected animals. Bite wounds were predominantly observed on the hind limbs, neck, and tail regions. Brain tissue samples submitted to the Rabies Diagnostic Unit of the Faculty of Veterinary Medicine and Animal Science tested positive for rabies by the Fluorescent Antibody Test (FAT). Following confirmation, the remaining 75 heifers received pre-exposure rabies vaccination, and the heifer unit was declared a high-risk zone. Four farm workers exposed to saliva from affected animals were immediately referred for post-exposure prophylaxis. This outbreak highlights the importance of farm biosecurity, stray dog control and vaccination, rapid diagnosis, early reporting, appropriate wound management, and farmer awareness in preventing rabies in livestock and subsequent human exposure.

Keywords: *Cattle, Diagnosis, Farm, Livestock, Rabies*

Application of the Diffusion of Innovation Theory to Identify Factors Affecting Biosecurity Adoption among Horse Handlers in Sri Lanka

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The importation of live horses poses potential animal and public health risks, highlighting the importance of effective biosecurity during quarantine. However, biosecurity practices among horse handlers are not consistently implemented and affected by various factors. This study investigated the factors influencing biosecurity adoption among horse handlers during the quarantine period. This study employed Diffusion of Innovation Theory and total enumeration sampling method. Based on the Diffusion of Innovation Theory, the study examined knowledge and attitude as key determinants of biosecurity adoption. A total enumeration sampling approach was used, and data were collected from 16 horse handlers at the Animal Quarantine Station, Colombo, using a pretested structured questionnaire.. Partial Least Squares Structural Equation Modelling (PLS-SEM) was employed to evaluate the measurement model and test the structural relationship among knowledge, attitudes and biosecurity practices including the mediating effect. Results revealed that knowledge had a significant positive effect on attitude ($\beta = 0.64, p < 0.01$), while attitude significantly influenced biosecurity practices ($\beta = 0.58, p < 0.01$). The direct effect of knowledge on biosecurity practices was not statistically significant ($\beta = 0.21, p > 0.05$). Attitude significantly mediated the relationship between knowledge and biosecurity practices (indirect $\beta = 0.37, p < 0.01$), indicating that knowledge alone is insufficient to promote behavioral changes. The findings suggest that biosecurity interventions should combine knowledge enhancement with attitude-building strategies, including practical demonstrations and participatory learning. This study provides indication to support improved biosecurity compliance among horse handlers, thereby strengthening quarantine systems and reducing the risk of disease transmission.

Keywords: Attitude, Biosecurity, Diffusion of Innovation Theory, Horse handlers, Knowledge

Differentiating Avirulent and Virulent Newcastle Disease Virus Strains using RT-PCR.

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Newcastle disease is one of the most economically important poultry disease. It is a highly contagious fatal notifiable disease. This study was conducted to differentiate avirulent and virulent Newcastle disease virus (NDV) isolates using pathotype-specific primers. A total of 20 NDV isolates, collected from NDV-positive samples confirmed by haemagglutination (HA) and haemagglutination inhibition (HI) tests, were submitted to the Animal Virus Laboratory in 2020, 2021, and 2022 by quarantine units, veterinary investigation centers, and during field outbreaks in Sri Lanka, and were used in this study. Samples were propagated in embryonated chicken eggs (ECE), and the allantoic fluids were used for further studies. RNA was extracted from allantoic fluids (AF) using the Viral RNA Purification Kit (BioNote, Korea) according to the manufacturer's instructions. Three primer sets were used for amplification. The first set, NDV-MF/MR, was universal for the M gene. Two additional sets targeted the F gene cleavage site: NDV-FA/FB specific for virulent NDV strains, and NDV-FA/FC specific for avirulent strains. RT-PCR was performed using the One-Step RT-PCR Kit (QuantaBio, USA) according to the manufacturer's instructions. Amplification of the M gene was carried out at 50 °C for 30 min, followed by initial denaturation at 95 °C for 5 min and 35 cycles of denaturation at 95 °C for 30 s, annealing at 50 °C for 30 s, extension at 72 °C for 40 s, and a final extension at 72 °C for 10 min. Amplification of the F gene was performed under the following conditions: 50 °C for 30 min for cDNA synthesis, followed by initial denaturation at 95 °C for 1 min, and 35 cycles of 95 °C for 10 s, 60 °C for 30 s, and 72 °C for 1 min, with a final elongation step at 72 °C for 8 min. PCR products were subjected to gel electrophoresis. Results showed that 8 isolates belonged to virulent NDV strains, while 12 isolates were avirulent. The Animal Virus Laboratory currently employs HA and HI tests for NDV diagnosis; however, these methods cannot differentiate vaccine strains from disease-causing strains. This limitation directly affects the country's export market (chicks, eggs, meat). The pathotype-specific RT-PCR method described here facilitates importation, exportation, and early diagnosis of ND outbreaks, thereby reducing economic losses to the poultry industry.

Keywords: F gene, M gene, Pathotype, Newcastle Disease Virus, Avirulent, Virulent

Screening for Aflatoxin M1 in Fresh Milk from Four Selected Dairy Farms in Sri Lanka

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Aflatoxin M1 is a carcinogenic metabolite excreted into milk, classified as a Group 2B human carcinogen by the International Agency for Research on Cancer (IARC), with hepatotoxic, hepatocarcinogenic, mutagenic, and teratogenic properties and potential for immunosuppression. Aflatoxin M1 represents a major food safety threat for infants and children consuming milk. Therefore, this study screened aflatoxin M1 content in fresh cow milk from four selected dairy farms in Sri Lanka and investigated contamination patterns related to cow specific factors such as breed, lactation stage, age and parity. A total of 163 fresh cow milk samples collected directly from individual lactating cows for sterilized plastic tubes across four selected dairy farms (Farm A, n = 45; Farm B, n = 64; Farm C, n = 24; Farm D, n = 30) were analyzed for aflatoxin M1 using the aflatoxin M1 enzyme-linked immunosorbent assay (Veratox®; Neogen Corporation, USA) with a detection limit of 4.3 ppt. Results revealed aflatoxin M1 concentrations ranging from 4.7 to 153 ppt with a mean of 82.63 ± 35.15 ppt. Some of the samples exceeded the maximum limit (50 ppt) of the European Commission Regulations but remained within maximum limit (500 ppt) of the United States Food and Drug Administration (FDA). Samples collected from one dairy farm in Kurunegala District showed significantly higher mean aflatoxin M1 levels (110.82 ppt) compared to other farms. Pure Jersey cattle breed showed the highest mean aflatoxin M1 concentration (103.28 ppt) compared to Friesian $\times$ Jersey crossbreeds (73.93 ppt) and other breeds (93.72 ppt). Younger cattle aged between 25 and 49 months, showed significantly higher aflatoxin M1 levels (103.74 ppt), with concentrations declining as age increased. Milk samples collected during early lactation stage of cattle showed the highest mean aflatoxin M1 levels (92.47 ppt), decreasing through mid to late lactation stages. Negative correlations were observed between aflatoxin M1 levels and age ($r = -0.252$; $p < 0.05$) and parity ($r = -0.193$; $p < 0.05$). In conclusion, this observed contamination can be associated with exposure of dairy cattle to aflatoxin B1 contaminated feed, as feed samples were not analyzed during this study. These findings highlight the need of regulatory standards and ensuring milk safety in Sri Lankan dairy systems.

Keywords: Aflatoxin B1, Aflatoxin M1, Fresh Milk, Screening

Salmonella in Dairy Cattle, Pigs and Poultry in the Gampaha District, Sri Lanka: A Pilot Study

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Salmonella are important zoonotic pathogens and major causes of foodborne diarrhoeal disease worldwide. They include *Salmonella bongori* and *Salmonella enterica*, with diverse serotypes that can persist in the environment and colonise animals as asymptomatic carriers. Antimicrobial resistance among *Salmonella* is an increasing public health concern. This pilot study aimed to determine the prevalence and antimicrobial susceptibility of *Salmonella* in dairy cattle, pigs, and poultry in the Gampaha District, Sri Lanka. A cross-sectional pilot study was conducted in two dairy cattle farms, 3 pig farms, and one commercial layer farm across 3 veterinary ranges (Katana, Kadawatha, and Welisara) in Gampaha District. Samples were processed using standard bacteriological methods in accordance with the Sri Lanka College of Microbiologists (SLCM) Laboratory Manual. Isolates were identified by colony morphology, Gram staining, and biochemical tests. Antimicrobial susceptibility was determined by the Kirby–Bauer disk diffusion method using *Escherichia coli* ATCC 25922 as the quality control strain, according to CLSI standards. The antibiotics tested were ampicillin, ceftriaxone, meropenem, amikacin, ciprofloxacin, nalidixic acid, azithromycin, and chloramphenicol. *Salmonella* was isolated from 6.6% (2/30) of dairy cattle rectal swabs and 6.6% (2/30) of poultry cloacal swabs, while no isolates were detected in pig rectal swabs (0/30). Dairy cattle isolates were susceptible to all tested antibiotics except ciprofloxacin, with one isolate resistant to ciprofloxacin. Poultry isolates were susceptible to all tested antibiotics except chloramphenicol, with one isolate showing resistance. *Salmonella* was detected at a low prevalence in dairy cattle and poultry, with no isolates detected in pigs. Overall, isolates remained highly susceptible to most antibiotics used in treatments. However, reduced susceptibility to ciprofloxacin among cattle isolates and resistance to chloramphenicol among poultry isolates highlight the importance of continued surveillance of antimicrobial resistance in food-producing animals. Although chloramphenicol is prohibited in food-producing animals in Sri Lanka, resistance genes may persist in bacterial populations through horizontal gene transfer and co-selection by other antimicrobials.

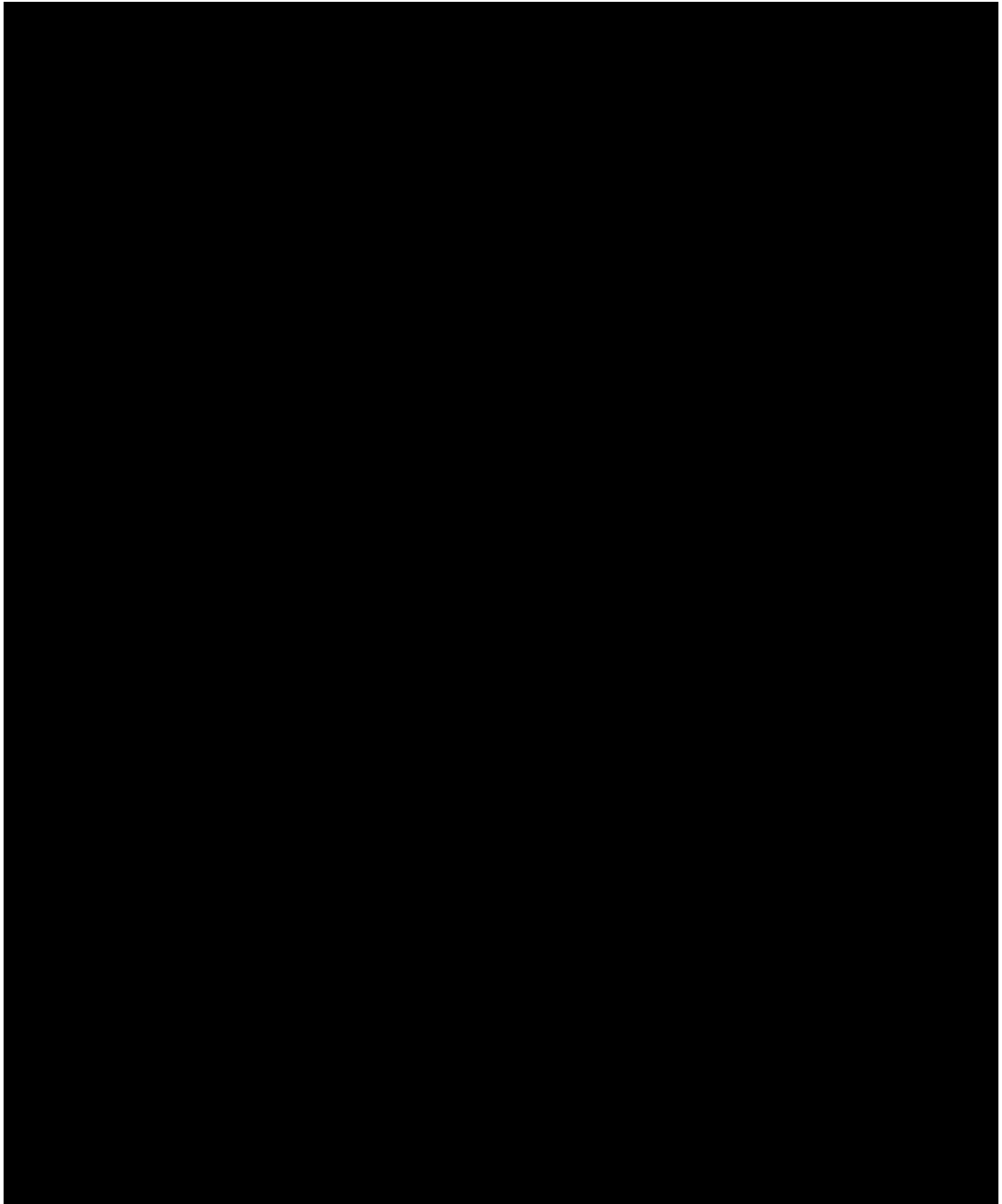
Keywords: Antimicrobial Resistance, Food-Producing Animals, *Salmonella*, Zoonotic Pathogens

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**A Systematic Review of Rabies Elimination Efforts in Asian Countries
With Special Reference to Sri Lanka: 2000 – 2025**

Gamage Niroshan*

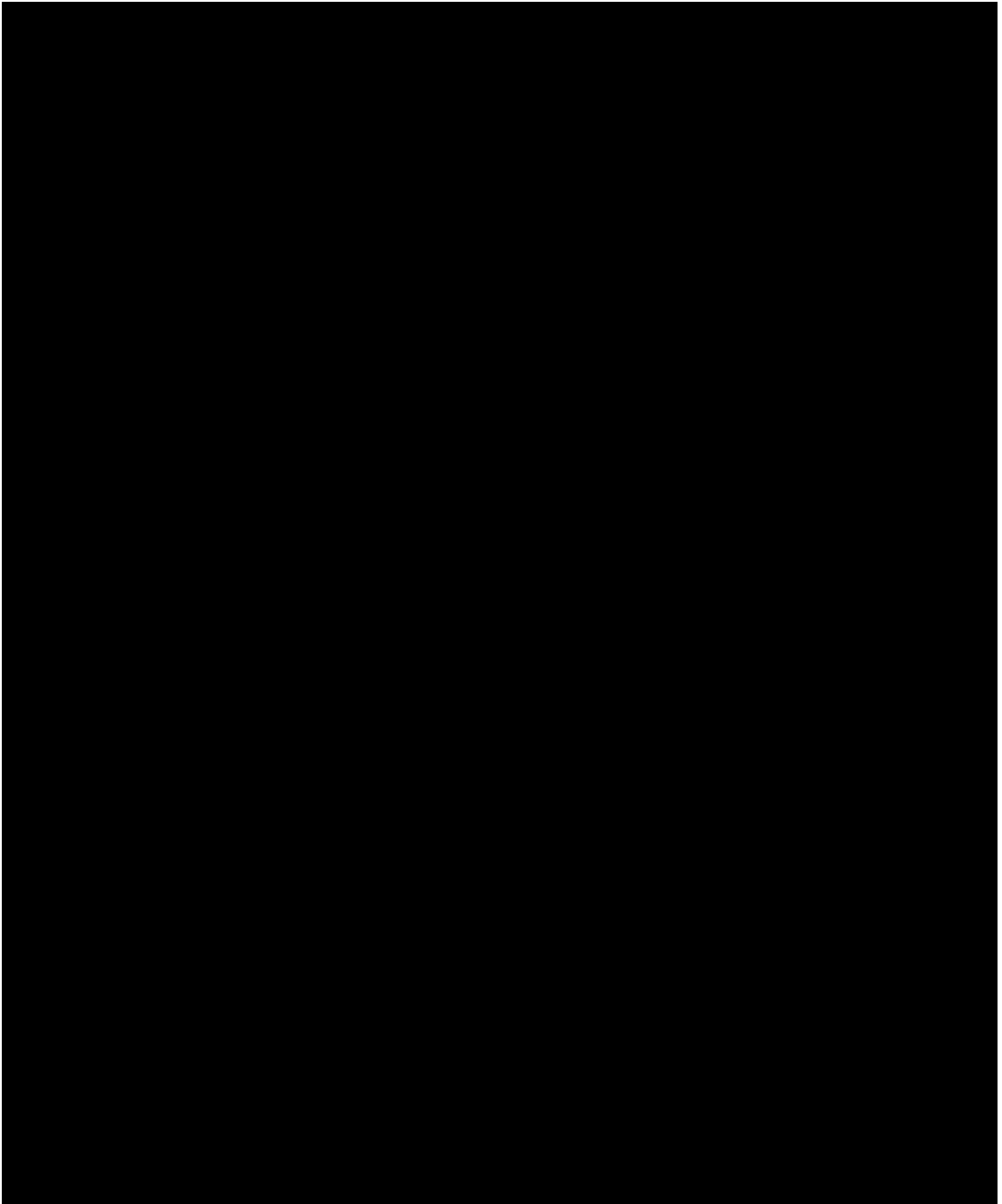
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A Systematic Review of Zoonoses Reported in Sri Lanka Between 2000 and 2025: Epidemiology, Burden, and Veterinary Importance

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Clinical Evaluation of Immunoglobulin Therapy in Canine Distemper Infection: A Case Series of Treated Dogs in Sri Lanka

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Canine distemper is a highly contagious and potentially fatal viral disease that affects unvaccinated dogs. Clinical signs mainly affect the respiratory, gastrointestinal, and nervous systems. The clinical response of naturally affected dogs treated with purified hyperimmune immunoglobulin (CanGlob-D[®]) in combination with conventional supportive therapy is evaluated in this study. A clinical trial was conducted with 10 dogs naturally infected with canine distemper that presented with compatible clinical signs, had positive rapid antigen test results, and had client consent. Purified hyperimmune immunoglobulin (CanGlob-D[®]) was administered intravenously at 0.4 ml/kg to 6 dogs in addition to supportive management of intravenous fluid therapy, antibiotics, symptomatic treatment, and nutritional support, while 4 dogs receiving supportive therapy alone served as controls. In this study, appetite, respiratory signs, neurological signs, treatment duration, and survival outcome were monitored for three months. All ten dogs were unvaccinated, and fever, ocular and nasal discharge, anorexia, lethargy, vomiting, coughing, and neurological signs such as myoclonus, recumbency, or paralysis were observed as common clinical signs. Of 6 dogs in the experimental group, 1 recovered completely, 4 showed partial clinical improvement, and 1 died, whereas all four dogs in the control group died during the corresponding treatment period. Reduced nasal and ocular discharge, improved appetite, decreased lethargy, reduced myoclonus frequency, and improved mobility were observed in the experimental group. The treatment duration ranged from 3 to 5 days. The fatal case was associated with delayed presentation and advanced neurological impairment. Dogs with clinical signs of canine distemper and diagnosed with the disease have shown remarkable clinical benefits from treatment using purified anti-canine distemper immunoglobulin, administered alongside supportive therapy. Immunoglobulin treatment was more effective when started at an early stage of infection, before animals developed neurological signs. Further controlled studies with larger sample sizes may confirm therapeutic efficacy and optimize treatment protocols derived from the existing literature.

Keywords: Canine Distemper, Clinical Trial, Passive Immunotherapy

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The Spectrum of Care: Balancing Quality Care, Client Value, and Revenue in Veterinary Practice

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This study examined whether a client-centered approach to veterinary care could support clinical outcomes and financial sustainability. The Compassionate Calculator is a client-centered practice management model that explores the interrelationships between expanded access to care, client acquisition, clinical utilization, and financial performance in veterinary practice. The challenge that most veterinarians face is delivering patient-centered care and sustainability in their practices. Issues of affordability and accessibility of veterinary services can limit the implementation of such initiatives. The purpose of this study was to examine whether client-centered care delivery would help to enhance patient accessibility, clients' acquisition, and clinical utilization without compromising the financial bottom line. The changeover to new ownership of our clinic took place in December 2023, and the review of the records of our clinic was done using the evet Practice® practice management software by Covetrus. The analysis period of the study (from January 2024 - May 2026) was compared with historical trends for the same parameters during the previous ownership period (2019-2023). Some variables analyzed include number of new clients, use of home visit service, surgery, and gross clinic income. There has been an increased average annual number of acquisition of new clients to 860 clients from 255 clients during the 2019-2023 period, showing a rise of 237.8%. Ninety-nine different patients who may not otherwise access veterinary service due to lack of transportation received services through the home visit program in the form of 124 services. A total of 293 surgical procedures were performed during this period, indicating increased utilization of clinical services. The average annual gross income was increased to \$1.58 million from approximately \$1.00 million during the period 2019-2023. There has been a significant increase of 57.7% in the immediate years after the change in ownership from 2024-2025. The increased number of clients, accessibility of veterinary medicine, higher usage of services, and improved profitability of the clinic have been attributed to the implementation of a client-focused practice. Such findings suggest that patient access and sustainability of the clinic can benefit from compassionate and relation-oriented veterinary practices. Further research is needed with multiple veterinarians involved to confirm this effect in other settings.

Keywords: Client-centered Care, Veterinary Practice Management, Client Acquisition, Home Visit Services

Assessment of Knowledge, Attitudes, and Practices on Antimicrobial Resistance among Middle-Level Officers in the Department of Animal Production and Health, Sri Lanka

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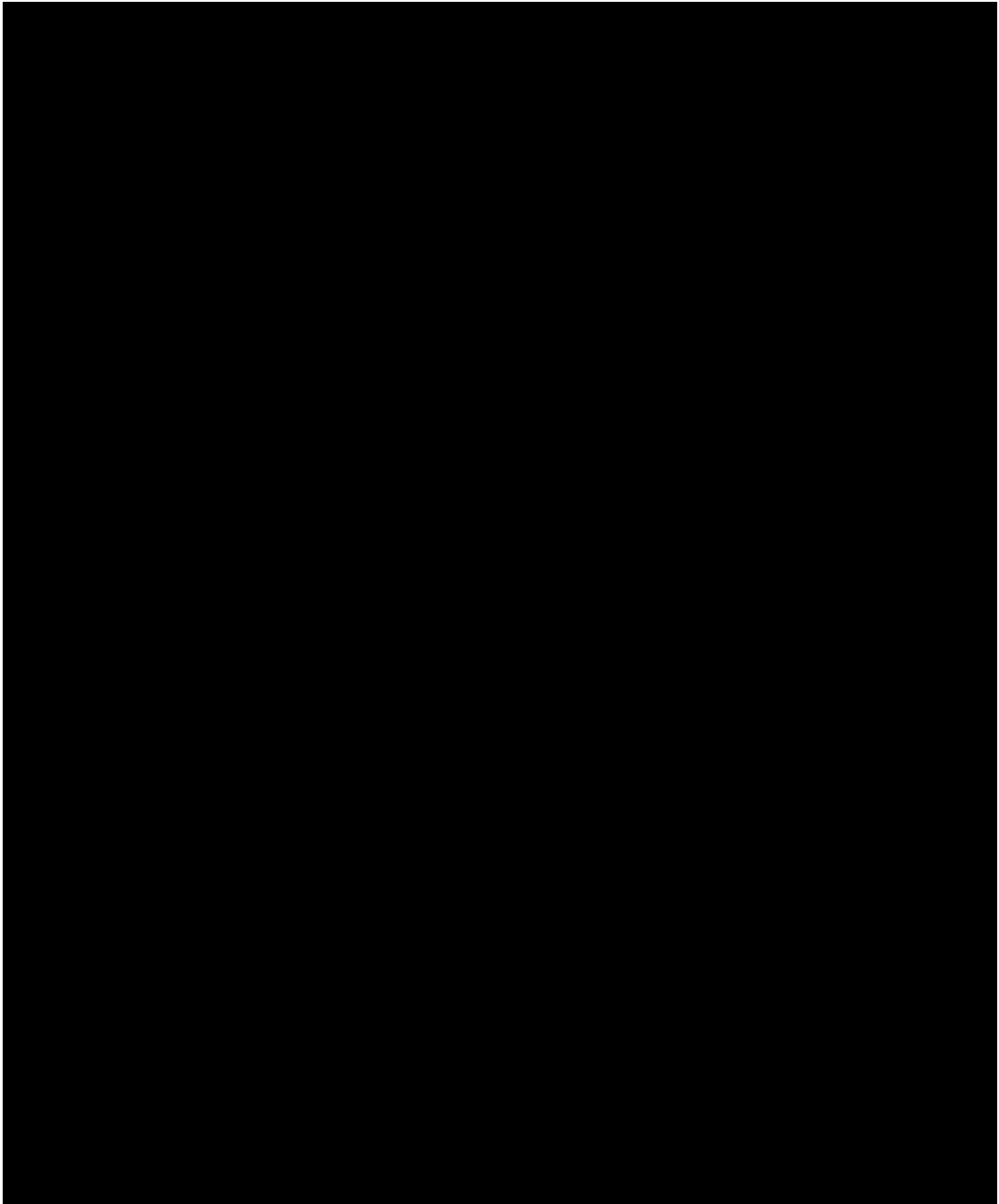
Antimicrobial resistance (AMR) is a critical global health threat driven largely by human behaviour. The major objective of this study was to assess knowledge, attitudes, and practices (KAP) regarding AMR among middle-level officers of the Department of Animal Production and Health (DAPH), Gatambe, Peradeniya. A cross-sectional study was conducted among 82 middle-level officers of the DAPH, including livestock development officers, management service officers, technical officers, and other technical staff representing science and non-science educational backgrounds, using a 30 item KAP questionnaire. Knowledge, attitude, and practice scores were assessed using predefined scoring scales, with maximum scores of 10, 5, and 10, respectively. Spearman's correlation was used to assess relationships among KAP domains, Mann-Whitney U and Kruskal-Wallis H tests were used to compare KAP scores across respondent demographic characteristics, and binary logistic regression was used to identify predictors of good practice. Statistical analyses were performed due to the non-normal distribution of the data ($p < 0.001$). Additionally, KAP levels were categorized using Bloom's cut-off points ($\geq 80\%$ = Good, 60-79% = Moderate, $< 60\%$ = Poor). High overall levels of knowledge (median = 8.66/10) and attitude (median = 4.80/5) were observed, with 75.6% and 92.7% of respondents categorized as having good knowledge and attitude, respectively. However, overall practice scores (median = 7.75/10) showed greater variability with only 50.0% showing good practice, while 29.3% were categorized as poor and the remainder as moderate. A significant positive correlation was observed between knowledge and attitude ($\rho = 0.278$, $p = 0.012$), but practice was not significantly correlated with knowledge or attitude ($p > 0.05$), indicating a notable knowledge practice gap. Binary logistic regression further demonstrated that knowledge and attitude were not significant predictors of good practice. Comparative analyses showed that no statistically significant differences were observed in overall KAP scores according to respondents' gender, education level, academic stream, or professional service category ($p > 0.05$). However, item level analysis identified important gaps in specific areas, as 58.0% of respondents reported unsafe antibiotic disposal practices, while 48.8% reported seeking antibiotics for minor illnesses such as the common cold or minor injuries. Respondents with science educational backgrounds were significantly better at identifying antimicrobial drugs from other medicines than those with non-science backgrounds ($p = 0.035$). The findings suggest that, formal education improves theoretical knowledge of AMR, but it fails to translate into appropriate antimicrobial use practices. Future AMR interventions should therefore place greater emphasis on behavioural change strategies that bridge the knowledge practice gap.

Keywords: AMR, KAP Analysis, One Health, Public Health

**Wildlife Reservoirs as an Understudied Risk in Sri Lanka's Rabies
Elimination: The Role of Mongooses, Civets, and Bats**

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Antibiotic Resistance Patterns of pathogens causing mastitis in dairy cattle: A Preliminary Study Conducted in Selected Veterinary Ranges in Anuradhapura District.

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Dairy farming is an important agricultural enterprise in Sri Lanka, contributing to national milk production and rural household income. In 2024, the annual dairy milk production in Anuradhapura District was 48,036,600 litres, with a cattle population of 146,241 and a buffalo population of 37,110. Despite this, milk yield per animal remains low in the district. Mastitis is a serious disease affecting dairy herds, occurring in clinical and subclinical forms that reduce milk production and quality. Misuse of antibiotics for mastitis contributes to the growing global concern of antimicrobial resistance. This study aimed to identify bacterial pathogens causing mastitis in milk samples from 11 selected locations (two from one range) across 10 of the 22 veterinary ranges in the Anuradhapura district and evaluate their antibiotic susceptibility profiles. A total of 73 milk samples were collected, including 7 clinical and 66 California Mastitis Test-positive subclinical mastitis cases. Then, bacterial isolation, identification, and antibiotic susceptibility testing (AST) were performed using the Kirby–Bauer disk diffusion method following CLSI guidelines, and the data were analysed. *Staphylococcus spp.* (74.39%) was the predominant pathogen, followed by *Klebsiella spp.* (15.85%), *Escherichia coli* (7.32%), *Proteus spp.* (1.22%), and unidentified bacteria (1.22%). *Staphylococcus spp.* was dominant across sampling areas, with the highest numbers in Galkulama (14 isolates) and moderate numbers in Eppawala, Medawachchiya, Thirappane, Rambewa, and Wilachchiya. *Klebsiella* and *E. coli* were found in low numbers in sampling areas. No significant association was found between sampling areas and the distribution of mastitis pathogens ($p = 0.143$). When performing AST, high susceptibility was observed for enrofloxacin (92.68%, $p = 0.028$) and gentamicin (92.68%, $p = 1.000$), while showing 100% resistance against amoxycillin, ampicillin, and penicillin. Resistant levels for neomycin (51.22% resistant, $p = 0.007$), oxytetracycline (74.39% resistant, $p = 0.556$), and streptomycin (82.93% resistant, $p = 0.326$) were variable. The predominant mastitis pathogen in the selected regions was *Staphylococcus spp.*, while enrofloxacin and gentamicin were the most effective antibiotics. This study provides valuable baseline data on the epidemiology of bovine mastitis and antimicrobial resistance in the Anuradhapura District.

Keywords: Antibiotic Susceptibility, Anuradhapura District, Bovine Mastitis, One-Health Perspectives, *Staphylococcus spp.*

Acknowledgements: District Veterinary Investigation Centre (DVIC), Kurundankulama, Anuradhapura, Department of Animal Production and Health (DAPH), Sri Lanka.

A Preliminary in-vitro Investigation of the Antibacterial Activity of Aqueous and Hexane Extracts of Cladodes of *Opuntia monacantha* and *Opuntia dillenii*, Two Wild Cactus Species Present in Sri Lanka

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Antimicrobial resistance (AMR) is a major global health concern that reduces the effectiveness of antibiotics and threatens both human and animal health. This has increased interest in identifying plant-derived antibacterial compounds as potential sources of new antimicrobial agents. This preliminary in vitro study evaluated the antibacterial activity of aqueous and hexane extracts of *Opuntia monacantha* and *Opuntia dillenii*, two wild cactus species found in Sri Lanka, against *Staphylococcus aureus* (ATCC 25923) and *Escherichia coli* (ATCC 25922). Fresh cladodes of *O. monacantha* (Dambulla) and *O. dillenii* (Ussangoda) were collected and authenticated by the Department of Botany, Faculty of Science, University of Peradeniya. Species identification was supported by comparing the samples with authenticated herbarium specimens and taxonomic references at the National Herbarium, Royal Botanic Gardens, Peradeniya. The cladodes were cleaned, de-spined, sliced, oven-dried at 50 °C for three days, powdered, and extracted using water and hexane. The aqueous extracts were prepared by stirring at 45 °C for five hours, followed by centrifugation and freeze-drying, while the hexane extracts were prepared using Soxhlet extraction. Antibacterial activity was tested using agar well diffusion, drop diffusion, and agar dilution methods. Neither extract produced inhibition zones in the agar well diffusion assay. In the drop diffusion assay, the aqueous extracts produced small, irregular zones without clear inhibition margins, while the hexane extracts showed no visible activity. In the agar dilution assay, the aqueous extracts produced slight reductions in bacterial growth against both bacterial species, whereas the hexane extracts showed no observable activity. These findings indicate limited antibacterial activity under the conditions tested and may be due to the extraction method, solvent polarity, low levels of active compounds, or poor diffusion in agar. Further studies using improved extraction methods, higher extract concentrations, purified fractions, and determination of minimum inhibitory concentration (MIC) and minimum bactericidal concentration (MBC) are needed to better evaluate the antibacterial properties of these species. This study provides baseline data for future research on the antibacterial properties of Sri Lankan *Opuntia* species.

Keywords: *Antimicrobial Resistance, Natural Alternatives, Wild Cactus species, Opuntia monacantha, Opuntia dillenii, Sri Lanka*

Correction of a Closed Mid-Shaft Comminuted Tibia–Fibula Fracture Using a Tie-In Configuration in a Dog: A Case Report

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Kuku 1-year-5-month-old female crossbred dog was presented to the Veterinary Teaching Hospital, Peradeniya, with non-weight-bearing on the left hind limb following a road traffic accident. Radiographic examination revealed a closed mid-shaft comminuted fractures of left tibia fibula consisting of 3-5 fragments measuring approximately 2-3 in size. Because of the comminuted nature of the fracture, the limited availability of bone plates, and financial considerations, a tie-in configuration using an intramedullary (IM) pin combined with a unilateral external skeletal fixator was selected for fracture stabilization. The IM pin was inserted into the tibial in retrograde procedure, and its protruding proximal end was bent on itself to create a tie-in like configuration. Two external fixator rods were used to secure the bone fragments using connecting clamps, thereby enhancing construct stability and reducing bending and rotational forces. Postoperative radiographs confirmed satisfactory fracture reduction, alignment, and implant placement. Postoperative management included Meloxicam at 0.2mg per Kg, Antimicrobial therapy with Cefuroxime at 20mg per Kg, activity restriction, and routine pin-tract care. Progressive improvement in limb function was observed during follow-up, with satisfactory radiographic fracture healing and no major implant-related complications. The external skeletal fixator was removed after radiographic confirmation of adequate bone union. From the owner's perspective, management of the external skeletal fixator presented certain challenges. Routine wound dressing and pin-tract care were difficult because of the protruding nature of the external fixator, requiring careful handling during cleaning. In addition, regular follow-up visits were necessary for monitoring fracture healing, implant stability, and pin-tract condition, which increased the time and commitment required from the owner. This case demonstrates that the tie-in configuration is an effective and economical method for stabilizing selected comminuted tibial fractures in dogs, providing satisfactory mechanical stability and favourable clinical outcomes. Successful treatment depends on appropriate case selection, meticulous surgical technique, and diligent postoperative management.

Keywords: *Tie-In Configuration, Canine, Tibial Fracture, Intramedullary Pin, External Skeletal Fixator*

Successful Treatment of Cutaneous Pythiosis in Two Dogs with Itraconazole: Case Report

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Pythiosis is a life-threatening disease of humans and animals caused by the aquatic oomycete *Pythium insidiosum*, which is prevalent in tropical and subtropical regions. In dogs, pythiosis commonly presents as cutaneous or gastrointestinal disease. This report describes the diagnosis and successful treatment of cutaneous pythiosis in two dogs presented to a Veterinary Teaching Hospital in Sri Lanka. The first case involved a four-year-old female German Shepherd dog presented with six ventral abdominal masses measuring 3.5–6 cm in diameter, which developed two months after mammary tumor surgery. The second case was a female crossbred dog presented with an irregular mass associated with the right caudal mammary gland. In both dogs, the masses were soft and gritty on palpation. The dogs were otherwise clinically healthy with a normal appetite and no systemic abnormalities. Fine needle aspiration of the masses yielded clear, slightly viscous fluid. Microscopic examination of unstained wet preparations revealed sporangia-like structures suggestive of *Pythium* spp. Aspirates were cultured on Sabouraud Dextrose Agar and inoculated into sterile distilled water and incubated at 37°C. Both samples produced sparsely growing white filamentous colonies. Microscopic examination of the colonies detected broad, non-septate branching hyphae. Motile biflagellate zoospores characteristic of *P. insidiosum* were observed in water cultures. Molecular confirmation was achieved by PCR amplification of the PinsEXO1 region using primers Dx3 (5'-GCGAGTTCTGGCTCGACTTTA-3') and Dx4 (5'-ACAAGCGCCAAAAAGTCCCA-3'), which generated the expected 550-bp amplicon. Both dogs were treated with oral Itraconazole (5 mg/kg , q 24hr) with other supportive therapy. Significant reduction in lesion size was observed within two weeks, and treatment was continued until complete remission. To the authors' knowledge, this is the first report of canine cutaneous Pythiosis in Sri Lanka. Pythiosis should be considered a differential diagnosis in dogs presenting chronic cutaneous masses, particularly in animals exposed to aquatic environments. Even though *P. insidiosum* lacks ergosterol in its cell membrane, primary target of most antifungal drugs, itraconazole may still exert a therapeutic effect against the organism.

Keywords: *Cutaneous Pythiosis, Aquatic oomycete, Sabouraud Dextrose Agar, Water cultures, Itraconazole*

Endoscopic Excision of an Ear Tumour in Dog

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Aural tumours in dogs, including ceruminous gland adenomas, adenocarcinomas, and squamous cell carcinomas, fibromas are relatively uncommon but can lead to chronic otitis, pain, and hearing impairment. Conventional surgical approaches such as lateral ear canal resection or total ear canal ablation are invasive and associated with significant morbidity. Endoscopic ear surgery has emerged as a minimally invasive alternative for such cases. A 5 years and 8 months old Cocker Spaniel female dog presented with clinical signs of head shaking, ear discharge, and discomfort. Otoscopic and endoscopic examination revealed a localized mass within the external ear canal. Diagnostic imaging x-ray and cytology/culture sensitivity test suggested a benign/malignant aural tumor. Aural tumour was clearly observed in endoscopic procedure. Tumour was located at lower end of horizontal ear canal (Before tympanic membrane). Ear tumour was observed during the follow-up period of 8 days. Excision of an ear tumour was performed under gaseous anesthesia. Induction was done with dexamethasone and propofol @ 2.5mg /kg, pain medication with injection Meloxicam at 0.2mg/kg body weight. Intubation was done using 5mm ET tube after local spray of 10% lignocaine in oropharyngeal area and maintained on sevoflourane 2- 4% and oxygen 4 litter with VCV (Volume Control Ventilation) mode having tidal volume of 190 and respiration was 12 to 15 with I:E of 1:2 (Inspiration: Expiration) with PEEP (Positive End Expiration Pressure). SpO₂ was 90-95. The mass was visualized with magnification and excised using endoscopic harmonic forcep. Care was taken to preserve surrounding healthy tissue and maintain canal integrity. During the procedure we observed tympanic membrane was absent in right ear where tumour was detected. Then we also observed the left ear where tympanic membrane was ruptured. Hemostasis was achieved, and the ear canal was flushed post-excision. Post-operative injection Meloxicam was given for next 3 days as a pain reliever. The procedure allowed precise visualization and complete removal of the tumor with minimal trauma. Postoperative recovery was uneventful, with reduced pain, no swelling, no discharge and rapid return to normal activity. Histopathology confirmed the diagnosis as a fibroma. Microscopic examination of tissue revealed presence of encapsulated growth of fibrous tissue proliferation. Fibrous tissue had abundant eosinophilic cytoplasm and oval basophilic nuclei, minimal epidermal hyperplasia was observed. Begin ear tumor observed during the follow-up period of 3 weeks. The endoscope proves very useful in visualizing the tumour and the tympanic membrane of ear, thus helping in proper and complete tumor removal. The endoscopic approach thus serves as a safe and reliable technique for tumour removal. It thus provides postoperative comfort for the patient.

Keywords: Oral Tumour, Chronic Otitis, Cocker Spaniel

Surgical Correction of a Congenital Urethral Diverticulum by Lower (Distal) Urethrostomy in a Neonatal Male Saanen Kid

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Congenital anomalies of the lower urinary tract are uncommon in neonatal small ruminants. Urethral diverticulum, characterized by a sac-like dilation arising from the urethral wall, is rarely reported in male caprine neonates. This report describes the clinical presentation, intraoperative findings, and successful surgical management of a congenital urethral diverticulum in a neonatal goat using lower urethrostomy. A three-day-old male Saanen kid was presented to the Veterinary Teaching Hospital with a non-painful, fluid-filled soft tissue swelling (approximately 4 × 3 × 2 cm) located ventral to the abdomen, caudal to the preputial orifice, without overlying skin coverage. The kid was bright, alert, and physiologically stable; however, stranguria and bilateral flank distension were evident. Digital compression of the swelling resulted in urine discharge through the urethral orifice, confirming communication with the urethral lumen. Differential diagnoses included urethral diverticulum and urinary bladder herniation. Urinary bladder herniation was excluded based on ultrasonographic findings, the absence of a palpable hernial ring, and the non-reducible nature of the swelling. A diagnosis of congenital urethral diverticulum was established, and surgical correction was elected. Preoperative management included tetanus toxoid administration and antibiotic prophylaxis with procaine benzyl penicillin (20 mg/kg, IM). Sedation was achieved using midazolam (0.3 mg/kg, IM), followed by induction of general anaesthesia with ketamine (5 mg/kg, IM). A ventral midline incision was made caudal to the preputial orifice, and blunt dissection exposed the distal penile shaft. An elliptical skin incision around the lesion enabled isolation of the diverticulum through careful periurethral dissection. Intraoperative examination confirmed a saccular diverticulum communicating directly with the urethral lumen. Urethra was incised longitudinally through the diverticulum, and the urethral mucosa was sutured to the surrounding skin using simple interrupted absorbable sutures (Vicryl 3-0) to create a permanent lower urethrostomy. Immediate postoperative urine flow through the new opening was observed. Postoperative recovery was uneventful, and the kid was discharged after three days. At the three-month follow-up, the animal remained clinically healthy with normal urination and no evidence of stricture or urinary tract infection. This case demonstrates that lower urethrostomy is a simple and effective surgical technique for definitive management of congenital urethral diverticulum in neonatal goats.

Keywords: Congenital, Lower Urethrostomy, Male Saanen Goat, Urethral Diverticulum

Successful Non-Surgical Treatment of a Peripheral Odontogenic Fibroma with Intralesional Bleomycin Therapy in a 6-year-old Labrador Retriever

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Peripheral odontogenic fibroma (POF) is a common benign gingival neoplasm in dogs, typically managed by complete surgical excision. This report describes the successful use of intralesional bleomycin as a minimally invasive alternative treatment for canine POF. A 7-year-old spayed female chocolate Labrador Retriever (52 kg; body condition score 4/5) was presented with a 2.5 × 1.5 cm oral mass located at the base of the left mandibular canine tooth (#304). The primary clinical finding was a slow-growing gingival mass without systemic abnormalities, and the differential diagnoses were neoplasia, granuloma and abscess. Diagnostic investigations included thoracic and skull radiography, cytopathology, histopathology, complete blood count, blood smear examination and serum biochemistry. Radiographs revealed focal osteolytic lesion in the mandible. Cytopathology demonstrated a mildly atypical spindle cell population. Based on cytopathology, the differential diagnoses list was modified as oral granuloma, peripheral odontogenic fibroma, gingival hyperplasia, ameloblastoma, oral melanoma, and fibrosarcoma. Histopathology confirmed peripheral odontogenic fibroma, characterized by spindle-to-stellate cells within an abundant collagenous matrix and low mitotic activity. As the owners declined surgical excision, intralesional bleomycin therapy was selected as an alternative treatment. Under sedation with midazolam and propofol, bleomycin was administered intralesionally at 10 IU/m² (14.1 IU total), distributed across multiple injection sites to ensure uniform intratumoral delivery. Treatments were repeated at 1-week and 1-month intervals. Adjunctive therapy included acetylcysteine (10mg/ kg q24h), gabapentin (10mg/ kg q24h), omega-3 fatty acids (1000IU q24h), and vitamin B complex supplementation. Tumour response was assessed using RECIST v1.1 criteria. Two months after treatment initiation, complete clinical resolution of the lesion was observed, with no residual or new lesions, fulfilling criteria for complete response. Biweekly follow-up examinations conducted for one year revealed no evidence of recurrence. This case demonstrates that intralesional bleomycin may represent an effective, minimally invasive alternative for managing canine POF when surgical intervention is not possible, highlighting an alternative therapeutic application for this benign oral tumour.

Keywords: *Peripheral Odontogenic Fibroma, Intralesional, Bleomycin*

Dogstar Foundation CNVR Program: A High-Welfare, High-Volume Model for Dog Population Management in Sri Lanka

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Dogstar Foundation's free spay-neuter program is a high-quality, high-volume (HQHV), community-based Catch-Neuter-Vaccinate-Return (CNVR) initiative aimed at dog population management and animal welfare in Sri Lanka. The initiative is centred in Gampaha district and targets free-roaming street dogs, community dogs, semi-owned dogs, and owned dogs, while supporting the National Rabies Eradication goals under the One Health framework. All activities are independently managed by Dogstar Foundation through coordinated efforts of the office administration team, survey units, and mobile CNVR field clinic teams. Currently, dual mobile surgical clinics operate simultaneously. Owned dogs are presented voluntarily by caregivers, while trained animal handling teams humanely capture free-roaming dogs. The program is transitioning from net-catching methods to cage-based capture systems. Each clinic includes dedicated stations for registration, anaesthesia, preparation, surgery, recovery, and postoperative monitoring. Patient records include animal and owner details, vaccination records, and consent documentation. All cases are recorded using a mobile data application. A standardized anaesthesia protocol incorporating multimodal analgesia is applied with pre-surgical analgesia, intraoperative local blocks, and maintenance with gas anaesthesia. All dogs are monitored at five-minute intervals from induction to recovery. All dogs receive ear-notching for visual identification, microchip implantation, and vaccinations, including anti-rabies vaccine. Postoperative analgesics and care instructions are provided; telephone follow-up is conducted postoperatively on days 1 and 6. The program also offers treatment for transmissible venereal tumours (TVT) and skin diseases. Since 2015, over 93,488 surgeries have been performed, with a low perioperative mortality rate of 0.056% (n=52), demonstrating sustained clinical safety over a decade of high-volume operations. The perioperative mortality rate is consistent with internationally reported rates (0.009-1.29%) and demonstrates that high standards of dog welfare and surgical care can be achieved within a CNVR framework in Sri Lanka. Unlike episodic, campaign-based sterilization programs, this program provides continuous, district-wide CNVR coverage across urban and rural communities in Gampaha district, progressing systematically through Divisional Secretariat divisions, supported by systematic population surveys, standardized HQHV protocols, and digital surveillance. Dogstar program proves that dog population management can be done humanely, scientifically, and sustainably, offering a replicable model for similar contexts across Sri Lanka and the region.

Keywords: Animal Welfare, CNVR, Dog Population Management, High Volume Spay-Neuter, Rabies Vaccination

Establishing a Cat-Friendly Sterilization and Vaccination Clinic: A Model for High-Welfare, Data-Driven Cat Population Management in Sri Lanka

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In Sri Lanka, dog population management programs are well established; however, significant gaps remain in community cat population management. Hence, this study aimed to establish and evaluate Sri Lanka's first dedicated cat-friendly sterilization clinic as a high-welfare, data-driven model for community cat population management. Catstar cat clinic started operating in June 2023, by Dogstar Foundation in Negombo. The Catstar project operates through two complementary pathways: a Dogstar-funded private clinic for sterilizations for owners able to self-transport, and a dedicated cat-friendly clinic serving owners requiring assisted transport, as well as community and stray cats. Owned cats were enrolled through a hotline-based appointment system if clinically healthy and weighing more than 1 kg. Informed written consent was obtained from owners prior to surgery. A dedicated transport service, cat taxi, using covered squeeze cages, was provided. Community and stray cats were humanely captured using trapping cages, without using nets. Stress-minimizing protocols included a low-noise clinical environment and the use of Feliway pheromone diffusers. Anaesthesia was performed using a standardized Kitten Quad protocol with multimodal analgesia. Strict aseptic procedures were maintained, and prophylactic antibiotics were not routinely administered. Patients were monitored every 5 minutes from induction until complete recovery. All cats received vaccines, including anti-rabies, and were ear-tipped for identification. At discharge, owners were provided with postoperative analgesia, a care leaflet, and vaccination records, followed by telephone follow-up on postoperative days 1 and 6. All clinical data are recorded digitally, and population monitoring is conducted through regular surveys of the Negombo cat population. From June 2023 to April 2026, 7019 cats were sterilized, with a perioperative mortality rate of 0.04% (n=3). The majority of cats were owned (88.7%), with females comprising 74% of all cases. The Catstar model demonstrates that integrating appointment-based owned-cat sterilization with Trap-Neuter-Vaccinate-Return (TNVR) for community and stray cats provides a humane, data-driven approach to sustainable cat population management, consistent with international review evidence. Its cat-friendly protocols, digital surveillance, and routine anti-rabies vaccination support animal welfare, public health, and Sri Lanka's One Health rabies elimination goals. Future efforts should focus on national expansion, protocol standardization, and strengthened surveillance.

Keywords: *Cat-Friendly Clinic, Feline Population Management, Feline Welfare, Rabies Prevention*

Surgical Management of Chronic Recurrent Vaginal Prolapse with Bladder Involvement in a Jersey Cow

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Vaginal prolapse is a common disorder in cattle, particularly during late gestation and the periparturient period. Although most cases respond to manual repositioning and vulvar retention techniques, chronic recurrent prolapse with associated complications remains a significant clinical challenge. This report describes a successful salvage surgical technique for managing chronic recurrent vaginal prolapse in a cow that was unresponsive to conventional treatment. A 9-year-old, second-parity Jersey cow was presented to the Veterinary Teaching Hospital, Faculty of Veterinary Medicine and Animal Science, University of Peradeniya, with a three-year history of recurrent vaginal prolapse. The cow had experienced uterine prolapse after its first calving, which had been successfully corrected. Following the second calving, recurrent vaginal prolapse had been repeatedly managed by manual repositioning and Bühner vulvar retention sutures; however, recurrence occurred within weeks to months. Clinical examination revealed dysuria due to partial urinary bladder involvement, accompanied by mild pain. Traumatic lesions with partial necrosis of the vulvar labia were also observed as a result of repeated prolapse and manipulation. Initial conservative management, including povidone-iodine lavage, debridement, and manual repositioning, failed to achieve long-term retention. Therefore, a novel reconstructive surgical technique was performed. The cow was sedated with xylazine hydrochloride (0.05 mg/kg, IM), and posterior epidural anaesthesia was induced using 5 mL of 2% lignocaine hydrochloride administered at the sacrococcygeal space. Bilateral cranioventral elliptical skin segments (approximately 12 inches long and 5 inches wide) were excised, extending from the base of the tail to the dorsal aspect of the lateral thigh. Following repositioning of the prolapsed vagina, the subcutaneous tissues and skin were closed using nylon in a simple continuous suture pattern. The skin resection reduced redundant perineal tissues created by prolonged traction, while advancement of the surrounding tissues restored perineal tension and provided additional mechanical support to maintain vaginal position. A Bühner vulvar retention suture was maintained for 10 days. Postoperative treatment included ketoprofen (2 mg/kg, IM) and procaine benzyl penicillin (20 mg/kg, IM) for five days. Follow-up examinations at one and three months demonstrated complete wound healing, resolution of dysuria, and no recurrence of vaginal prolapse. This case suggests that bilateral perineal skin resection may serve as an effective salvage surgical technique for chronic recurrent vaginal prolapse in cattle when conventional treatments have failed. Further studies involving a larger number of cases are required to validate its clinical efficacy.

Keywords: *Cattle, Chronic Vaginal Prolapse, Reconstructive Surgery, Skin Resection.*

Pancarpal Arthrodesis (PCA) in Two Dogs Using Hybrid Pancarpal Arthrodesis Compression Plates

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Arthrodesis is a salvage procedure, most often performed in the carpus or tarsus to ensure rigid stabilization of the joint. Hyperextension injuries, end stage degenerative joint diseases, complex distal antebrachial or carpal fractures and dislocation are the most common indications. Objective of the study was to describe the surgical management, complications and the outcome of the PCA in 2 dogs who had traumatic carpal hyperextension injuries. An 8-year-old cross bred dog with bilateral carpal hyperextension injuries and 2-year-old Labrador Retriever with a unilateral (left) carpal hyper extension injury were presented 2-3 month after sustaining falls from balconies. Both dogs were unable to bear weight on the affected limbs. The neurology examination was normal for both dogs. The crossbred showed bilateral medial radio-carpal instability along with radiographic radio-carpal joint dislocation, worse on left side. Additionally, on left carpus there was an open wound which was treated before the surgery. Radiographs of the Labrador revealed, left proximal, 5th metacarpal complete fracture with lateral radio-carpal instability. Dogs were pre-medicated with morphine and medetomidine followed by propofol injection. Anaesthesia was maintained with Isoflurane. Cefuroxime was administered pre and post operatively. Arthrodesis was performed through a dorsal approach to the joint. The articular cartilage between the antebrachio- carpal and carpo-metacarpal joints were removed to reveal the subchondral bone. Hybrid Dynamic Compression and Locking Compression plates were used. The plates were secured in compression using 3.5mm bicortical screws proximally in the radius and radial carpal bone, and 2.7mm screws distally in the third metacarpal bone. Autogenous cancellous bone graft was placed within the joint spaces prior to closure. Postoperative management included external capitation followed by controlled exercise for six to eight weeks. No major postoperative complications or implant failure were observed during follow-up visits. Radiographic healing and improved weight-bearing were evident at six weeks postoperatively, with mild residual lameness on the left limb of the crossbred dog. Both dogs achieved satisfactory pain free mobility on surgical limbs. These cases show the PCA provides a reliable salvage procedure for restoring long term limb function with severe traumatic carpal instability.

Keywords: Arthrodesis, Hybrid plates, Pancarpal

A Case of Chondrosarcoma in a Cross-bred Cat Presented to the Veterinary Teaching Hospital, Peradeniya

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Chondrosarcoma is a malignant neoplasm of cartilaginous origin that primarily affects the appendicular and axial skeleton, nasal cavity, and facial bones, and rarely occurs at extra skeletal sites. Feline Chondrosarcoma is uncommon and, unlike its canine counterpart, is typically locally invasive with low metastatic potential. This report describes the successful surgical management of appendicular chondrosarcoma in a 10-year-old spayed female crossbred cat presented with non-weight-bearing lameness of the left forelimb and a large poorly demarcated firm mass surrounding the shoulder joint. Clinical examination revealed no abnormalities other than the mass, and the cat was bright, alert, responsive, and maintained a normal appetite. Differential diagnoses included osteomyelitis, oedema secondary to trauma, and neoplasia. Plain lateral radiographs of the affected limb revealed an extensive expansile mineralized mass arising from the outer cortical surface of the affected bone, causing marked distortion of the normal osseous contour. The lesion exhibited heterogeneous stippled to amorphous mineral opacity with associated soft tissue expansion, consistent with an aggressive bone lesion. Fine-needle aspiration cytology demonstrated vacuolated spindle-shaped cells embedded within a magenta extracellular matrix. Based on radiographic and cytological findings, a tentative diagnosis of chondrosarcoma was made. Forelimb amputation including scapulectomy was recommended due to involvement of the shoulder joint. As the muscles of the synsarcosis were not infiltrated, a modified surgical approach was unnecessary. Xylazine and Ketamine was used to sedate and induce anaesthesia. Propofol 1% IV was used to maintain anaesthesia. Amputation was completed without disruption of the tumour mass. 3/0 PGA were used for the surgical procedure. Postoperative antibacterial and analgesic therapy was administered until wound healing was complete. Chemotherapy was not pursued due to the low metastatic risk associated with the tumour. Histopathological examination confirmed the diagnosis of chondrosarcoma. At the 5-month postoperative re-evaluation, the cat remained clinically healthy with no evidence of local recurrence or metastasis. This case highlights the importance of complete surgical excision in the management of feline appendicular chondrosarcoma and demonstrates that surgery alone can achieve an excellent clinical outcome without adjunctive chemotherapy. However follow ups are necessary to confirm there is no metastasis as this is a slow growing tumour.

Keywords: Chondrosarcoma, Amputation, Tumour, Cat

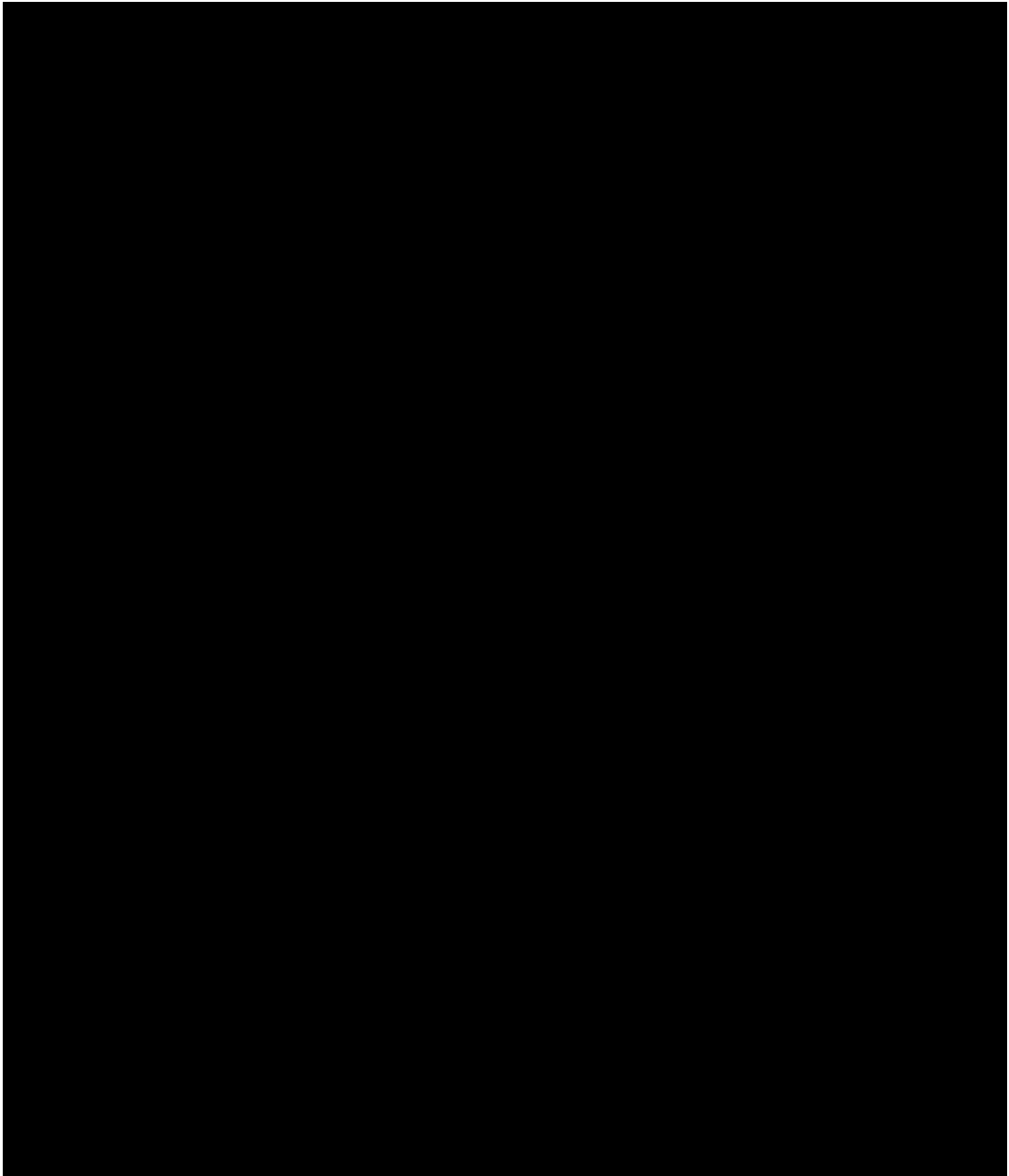
**Patient-Specific Three-Dimensional Printed Metallic Implants in
Veterinary Orthopedics Applications in Limb-Sparing Surgery, Joint
Reconstruction, and Complex Skeletal Disorders**

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Keywords: 3D printing, Additive Manufacturing, Patient-specific Implants, Veterinary Orthopedics, Limb-sparing Surgery

First Identification of Novel Infectious Bursal Disease Virus Variant (nVarIBDV) in Sri Lanka during 2023-2025.

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Infectious Bursal Disease Virus (IBDV) is a highly contagious viral disease of major economic importance in poultry production because of infection in Bursa of Fabricius resulting in immunosuppression and reduced flock performance. Conventional molecular classification of IBDV has largely depended on sequencing of the hypervariable region of the VP2 gene; however, the bi-segmented RNA genome of the virus permits reassortment between segment A and segment B, making combined VP2 and VP1 analysis essential for identifying emerging variants. During surveillance of vaccinated commercial broiler flocks in Sri Lanka from 2023 to 2025, IBDV was detected in both clinically infected and flocks with no clinical signs, minimum gross lesions and mortality, raising concern about the circulation of genetically distinct variant strains. This study investigated the presence of novel variant IBDV (nVarIBDV) in Sri Lanka using molecular detection and phylogenetic characterization. Bursa of Fabricius samples were collected from four large scale broiler farms, representing Kandy, Gampaha, Colombo, and Puttalam districts. Sampled flocks were aged between 30–40 days and included clinically suspected cases and birds from flocks sampled at processing plants for routine vaccine efficacy monitoring. Tissue impressions were prepared on Whatman FTA® Cards. Viral RNA was extracted from FTA card imprints, and VP2 and VP1 gene fragments were amplified using published primers. PCR products were visualized by agarose gel electrophoresis, sequenced using Oxford Nanopore Technologies, and analyzed phylogenetically in MEGA 11. VP2-based phylogeny showed that detected isolates clustered with very virulent IBDV strains in genogroup 3, indicating a vvIBDV-derived segment A. Conversely, VP1-based phylogeny classified the same isolates within genogroup B1, typically associated with classical IBDV strains. The resulting A3B1 genomic constellation confirms the circulation of a novel reassortant IBDV in Sri Lanka. Although overt disease was limited, subclinical infection may still cause bursal damage, immunosuppression, poor vaccine responsiveness, secondary infections, and production losses. This represents the first identification of A3B1 nVarIBDV in Sri Lanka and highlights the need for continuous molecular surveillance and dual-segment genetic characterization in vaccinated poultry populations. These findings highlight the need for improved health management strategies as novel viruses can evade protection exert by available vaccines.

Keywords: nVarIBDV, Sri Lanka

Acknowledgements: Farm and poultry processing plant management

Surveillance of Newcastle Disease Virus in Sri Lanka (2022–2025)

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Newcastle disease (ND) is a highly contagious fatal viral disease in poultry. Sri Lanka is considered as an endemic country. However, laboratory confirmed cases are low. Hence, surveillance was carried out to know Newcastle disease prevalence in poultry and wild bird population in Sri Lanka from 2022-2025. Samples were collected across the country according to the poultry population of each area. These included commercial poultry (CP), processing plants (PP), backyard (BP), cage swabs-wet markets (CSWM), cloacal swabs-ducks (CSD), fresh droppings of pet birds (FDPB), and wild birds (FDWB). Moreover, fresh droppings from hotspots from migratory birds (FDHS) were also collected and submitted to Animal Virus Laboratory in viral transport media within 48 hours. Samples were processed and inoculated into specific antibody free 10-11 day-old embryonated chicken eggs. Allantoic fluid was harvested and tested by HA/HI and RT-PCR after 96hrs. Positive samples were tested by RT-PCR to differentiate avirulent and virulent strains. In 2022, 16,333 samples were tested, including 5,014 (31%) FDHS, 4,152 (25%) CP, 5,106 (31%) BP, 1,949 (12%) FDPB, and 102 (1%) other samples. Eleven samples tested were positive for NDV and all were avirulent strains. In 2023, 25,251 samples were tested, including 7,484 (30%) FDHS, 3,162 (13%) CP, 3,670 (15%) PP, 7,411 (29%) BP, 1,265 (5%) CSWM, 812 (3%) CSD, 1,389 (6%) FDPB, 4 FDWB, and 54 other samples. Twelve samples tested were positive NDV, one was virulent (9.1%) and eleven were avirulent strains. In 2024, 23,901 samples were tested, including 7,688 (32%) FDHS, 4,312 (18%) CP, 2,787 (12%) PP, 6,443 (27%) BP, 935 (4%) CSWM, 553 (2%) CSD, 1,010 (4%) FDPB, 10 FDWB, and 163 (1%) other samples. Thirteen samples tested were positive and two were virulent (15.4%), and eleven were avirulent NDV strains. In 2025, 27,057 samples were tested, including 7,695 (28%) FDHS, 5,605 (21%) CP, 2,363 (9%) PP, 7,806 (29%) BP, 1,315 (5%) CSWM, 638 (2%) CSD, 1,344 (5%) FDPB, 147 (1%) FDWB, and 144 (1%) other samples. Sixteen samples tested were positive and three were virulent (18.75%) and thirteen were avirulent strains. This surveillance data reveals that circulation of virulent NDV strains are very low. Since NDV vaccination with live vaccine is practiced, these avirulent strains could be vaccine strains. Future studies are needed to characterize virulent and avirulent strains.

Keywords: *New Castle Disease Virus (NDV), Surveillance, Virulent, Avirulent*

Serological Investigation of Bovine Brucellosis in Suspected Cattle Herds in Vavuniya District, Sri Lanka

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Brucellosis remains a critical zoonotic challenge in Sri Lanka, significantly impacting livestock productivity through bovine abortion and posing a persistent threat to public health. The incidence of this disease is more prominent among animals in the dry zone of the country raised under extensive management systems. This study was conducted as part of a brucellosis control program in the Veterinary Investigation Center, Vavuniya. A mixed surveillance approach was carried out from January 2023 to December 2025. Active surveillance involved the collection of 650 raw bulk milk samples from randomly selected milk collection centers, and screening by Milk Ring Test (MRT). Trace-back investigations were performed on MRT-positive herds. Serum samples were collected from 356 individual cows and screened by the Rose Bengal Plate Test (RBPT). Subsequently a passive surveillance was conducted for 191 reported abortion cases using RBPT. All the RBPT positive samples were submitted to the Veterinary Research Institute (VRI) and confirmed by the Complement Fixation Test (CFT) in the Division of Bacteriology, VRI, Peradeniya. Out of 650 bulk milk samples, 184 (28%) tested positive for MRT. Out of the 547 (356+191) serum samples, 363 tested positive for Rose Bengal Plate Test (RBPT). From RBPT positive animals, 156 animals were confirmed as serologically positive for *Brucella abortus* by CFT, resulting in an overall confirmed seroprevalence rate of 28.5% (156/547) among the sampled high-risk population for *Brucella abortus*. In response to these findings, the S19 vaccine was administered to all non-pregnant cows and female calves over four months of age in identified serologically positive farms. The findings confirm the endemic status of brucellosis in Vavuniya, highlighting the necessity of integrated surveillance. To achieve successful eradication, the findings support consideration of test-and-cull strategies accompanied by compensation schemes. Furthermore, a continuous and systematic vaccination program is essential to reduce the bacterial reservoir and eventually achieve disease-free status in the district. This abstract addresses an important public health and Veterinary issue, presenting valuable surveillance data from a region where bovine brucellosis is endemic.

Keywords: *Brucellosis, CFT, Seroprevalence, Zoonosis*

Development of Swine *Mycoplasma* Oil Adjuvant Vaccine from a Locally Isolated *Mycoplasma Pneumoniae*

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Mycoplasma hyopneumoniae is a common pathogen causing chronic, clinically mild, infectious pneumonia in pigs. The disease is characterized by a persistent dry cough, reduced growth rates, and high morbidity, and it plays an important role in the porcine respiratory disease complex (PRDC). A proper vaccination program with improved management is crucial in disease control. Vaccines developed from swine *Mycoplasma hyopneumoniae* field isolates have demonstrated high effectiveness in reducing the clinical and economic impact, compared to the commercial products. However, due to the fastidious nature, *Mycoplasma* isolation is challenging. The objectives of the study were to isolate and identify *Mycoplasma* from a clinically infected swine herd and develop an oil adjuvant vaccine from the identified local strain. Lung samples ($n=10$) from post-mortems and nasopharyngeal swabs ($n=10$) from infected pigs were collected and inoculated into PPLO broth and incubated at 37 °C for 5 days. The incubated samples were subcultured into 10 mL PPLO broth and incubated until a colour change was observed. Subsequently, the broth samples were inoculated onto PPLO agar and incubated at 37 °C under higher moisture conditions. PPLO agar plates were observed for the typical fried egg appearance of *Mycoplasma* colonies using a phase contrast microscope. *Mycoplasma* was recovered from 3 lung samples, and all the nasopharyngeal swabs were negative. The suspected colonies were confirmed by conventional PCR. Here, the separate colonies in PPLO agar were picked up and transferred into 50 ml of PPLO broth, then incubated for 3 days. The microbiological contamination was checked. The harvest was prepared by adding 50 mL broth of broth culture in to 200 mL of PPLO. After 3 days of incubation the harvest was checked for microbiological contamination, and a colony count was obtained (10^5 CFU/mL). The cells in the harvest were inactivated by adding 0.5% formalin and shaking at room temperature for 24 hours. The inactivation was tested on PPLO agar. SEPPIC ISA 206VG adjuvant was added to the harvest at 50:50 ratios, and the emulsification quality was checked after homogenisation. The final product was tested for contamination by plating on blood agar (Aerobic and Anaerobic), MacConkey, and Sabouraud agar and no any bacterial and fungal contamination were detected. Safety was assessed using twenty ($n=20$) laboratory mice by injecting 0.25ml vaccine subcutaneously. Subsequently, normal saline was injected into the control group ($n=10$), and the groups were observed for mortality, inflammation at the injection site, and behavioural changes. None of the mice showed any side effect to the given vaccine. Piglets and non-pregnant adults in the affected farm were vaccinated, and the blood samples were collected to perform the immunological study.

Keywords: Swine *Mycoplasma*, Field Isolate, Oil Adjuvant Vaccine

Pulmonary Pathological Changes and Macrophage-Mediated Bronchiolar Damage in African Swine Fever-Infected Pigs in Sri Lanka

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African swine fever (ASF) is a highly contagious hemorrhagic viral disease of swine caused by the African swine fever virus (ASFV), a member of the family Asfarviridae. This disease was first recorded in East Africa, and the disease is currently present in different areas of Africa, Europe, and Asia causing a great financial loss to the swine industry. The first outbreak of ASF in Sri Lanka in October 2024 resulted in high mortality, causing the pig population to decline by 44.3%. Investigating the disease's pathology was imperative. This study aimed to characterize the pulmonary pathological changes in ASF-infected pigs in Sri Lanka and to elucidate the role of macrophages in the development of bronchiolar, alveolar, and vascular lesions. Lung samples of ASF-infected pigs confirmed by PCR (n=30) and apparently healthy pigs (n=30) of the breed large white and age between 3-8 months were collected from Kandy district and analyzed for histopathological changes (semi quantitative analysis for alveolar, bronchiolar and vascular changes by Masson's Trichrome stained tissue samples and macrophage counts in bronchioles by haematoxylin and eosin-stained tissue samples). Macrophage counts were compared using pairwise contrasts from a generalized linear model, while semi-quantitative lesion scores were analyzed using the Mann-Whitney U test. Semi-quantitative analysis of bronchiolar, alveolar, and vascular lesions revealed significantly ($p < 0.05$) greater tissue damage in ASF-infected pigs compared with controls. Furthermore, a significant increase ($p < 0.05$) in macrophage counts in the peribronchiolar area in the ASF- infected animals (33.52 ± 0.93) compared to the normal peribronchiolar area in the control group (0.18 ± 0.02). Increased collagenolysis was observed in the positive group showing higher damage in the bronchial wall in the ASF infected animals while there was no collagenolysis observed in the control group. In conclusion, the present study proposes that ASF induced bronchiolar damage would be supported by macrophages. Furthermore, these findings expand our understanding of pulmonary pathology in ASF and may aid in the diagnosis of ASF in Sri Lanka.

Keywords: African Swine Fever, Collagenolysis, Histopathology, Macrophages, Swine

A Web-Based Geospatial Animal Disease Reporting System (ADRS) for Livestock Disease Surveillance

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Animal diseases significantly reduce the productive capacity of livestock and impact human health through the transmission of zoonotic diseases. Real-time geospatial data on animal populations and disease occurrences is crucial for effectively mitigating the impact of animal diseases in the field. The management of the risks associated with animal disease requires a centralized and effective surveillance system to collect and analyse spatially relevant data accurately and in real-time. Traditionally, manual and individual geographic information systems (GIS) reporting has led to delays in the response to outbreaks and the inability to visualize disease events in real-time. The existing system in Sri Lanka lacks real-time geospatial visualization and centralized reporting. Therefore, the objective of this study was to design and develop a crowdsourcing-based, near-real-time, centralized Animal Disease Reporting System (ADRS) to support field veterinary officers and veterinary administrators in Sri Lanka. The system was developed using cutting-edge web technologies with strong password encryption and Role-Based Access Control (RBAC) to ensure security, privacy, and user-specific access permissions for Administrators and Veterinary Officers. A key component of the ADRS is the geospatial visualization of data in real-time at a district level across all 25 districts of Sri Lanka. The system is designed with a responsive user interface, enabling its operation through portable devices such as smartphones and laptops, which provide a distinct advantage for field veterinary officers during on-site. The system provides a structured means to manage how data flows based on user roles moving from the role-specific dashboard to manage records related to the farm, including both GPS coordinates and individual animal inventories. Disease reports are created through dynamically selected menus based on animal species and subsequently visualized on interactive map makers and analytical dashboards. The implementation of the ADRS is expected to enhance the efficiency and quality of disease surveillance data by reducing reporting time and enabling automated filtering and export of data based on date, geographic region, animal species, and disease category, compared to the existing manual paper-based system used in the Department of Animal Production and Health (DAHP). This centralized digital platform provides timely assistance to field veterinary officers and Veterinary authority personnel, enabling rapid detection of animal disease outbreaks through real-time geospatial data and facilitating evidence-based decision-making for the mitigation of animal disease events in Sri Lanka.

Keywords: *Animal Disease Reporting System (ADRS), Veterinary Surveillance, Geospatial Visualization, Role-Based Access Control (RBAC), Real-time Mapping, Outbreak*

Immunomodulatory Effects of Vector-based, Immune-complex, and Live-attenuated Infectious Bursal Disease (IBD) Vaccines for Broiler Chickens in Sri Lanka

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In Sri Lanka, the comparative efficiency of existing infectious bursal disease (IBD) vaccines and the link between immunogenicity, immunosuppression, and bursal preservation were poorly studied. Hence, the current study evaluated different IBD vaccine platforms (vector, immune-complex, and live attenuated) using Ross 308® male broiler chicks (n=200), which were randomly assigned to four groups along with an unvaccinated control. We measured IBD virus and concurrent Newcastle Disease (ND) virus antibody titers using ELISA, assessed bursal histopathology, and analyzed expression of selected cell-mediated immune response cytokine genes [Interleukin-2 (IL-2) and Interferon-gamma (IFN-γ)], together with production performances. The vector vaccine demonstrated superior early Immunity achieving the highest IBDV ($2.70 \pm 0.07 \log_{10}$, $P < 0.001$) and NDV ($3.10 \pm 0.05 \log_{10}$, $P < 0.001$) antibody titers on day 21 while effectively preserving the bursal architecture. In contrast, the immunocomplex vaccine exhibited delayed IBDV seroconversion, reaching the highest IBDV antibody titers by day 35 ($3.41 \pm 0.14 \log_{10}$); however, it caused severe progressive bursal atrophy characterized by the lowest bursal index (0.68 ± 0.07 , $P < 0.001$) and the highest spleen-to-bursa ratio (1.86 ± 0.20 , $P < 0.001$). The Cytokine gene expression analysis via RT-qPCR on day 21 supported these findings, where the vector group showed the highest IL-2 expression ($P < 0.05$), whereas the immune-complex group recorded the lowest IFN-γ levels ($p < 0.05$), indicating possible early post-vaccination immunosuppression. Interestingly, live attenuated vaccine showed variable responses, with moderate bursal damage and delayed seroconversion, reflecting possible maternal antibody interference. However, across all groups, production performance remained commercially acceptable (European Production Efficiency Factor >400) with a similar FCR value range. Overall, the vector vaccine demonstrated an optimal balance between the onset of early dual immunity and bursal preservation, while the immune complex vaccine may have produced immunosuppressive effects during the early post-vaccination phase.

Keywords: *Infectious Bursal Disease, Immunosuppression, Bursal Histopathology, Cytokine Genes, Vector Vaccine*

Acknowledgements: CIC Vetcare (Pvt)Ltd, Ekala, Sri Lanka

Topographic, Macroscopic and Microscopic Study of The Digestive Tract of Koi Carp (*Cyprinus rubrofuscus*)

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The ornamental fish industry in Sri Lanka has experienced notable growth in recent years, and among the various ornamental fish species, koi is important because of its economic value and ability to breed efficiently with favourable climatic conditions. Since the digestive system of fish can vary based on their feeding habits and taxonomy, this study focused on understanding the structure of the digestive tract in koi including topographic, macroscopic and microscopic features. Seven koi fish were euthanized, standard biometry was done and subsequently examined for anatomical features. Tissue samples were collected from different parts of the digestive system and prepared for microscopic analysis using three staining techniques: Haematoxylin and eosin (H&E), Periodic Acid–Schiff (PAS), and Masson's trichrome. Additionally, morphometric measurements were taken. The digestive system of koi is located under the swim bladder, reproductive organs, and partially covered by the hepatopancreas as in most fish species. It consists of mouth, pharynx, oesophagus, intestinal swelling, intestinal loops, and rectum. No distinct stomach was observed. The intestine was divided into proximal, middle, and distal loops with the average intestinal length of 61.68 ± 13.77 cm. The Relative Gut Length (RGL) was around two and the gut wall composed of four distinct layers: tunica mucosa, propria submucosa, tunica muscularis and serosa. The mucosa had folds along the intestine and there were no villi and intestinal glands. The pharynx and oesophagus were lined with stratified squamous epithelium with numerous goblet cells and taste buds, while the intestine and rectum had a simple columnar epithelium with microvilli and goblet cells. Abundance of goblet cells increased towards the rectum. Specialised cells like rodlet cells and telocytes were found in the propria submucosa in intestine. The tunica muscularis composed of skeletal muscles in pharynx and oesophagus, while smooth muscles in intestine and rectum. The distinctive digestive anatomy of koi characterized by absence of true stomach, intestinal villi, intestinal glands and presence of pharyngeal teeth, relative gut length related to omnivorous fish species. Overall, this study highlights the anatomical-features that supports the omnivorous feeding habit, and it provides valuable insight into the digestive adaptations in koi.

Keywords: *Digestive Tract, Histology, Koi, Morphology, Topography*

PCR-Based Molecular Detection of Ehrlichia spp. in Monkey Blood Samples Collected in Sri Lanka.

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Ehrlichia spp. are tick-borne intracellular haemoparasites of veterinary and zoonotic importance, infecting a wide range of hosts; however, their occurrence in non-human primates remains poorly studied. A total of 34 blood samples were collected to EDTA tubes from monkeys admitted to wildlife hospitals located in different regions of Sri Lanka and subjected to DNA extraction followed by polymerase chain reaction (PCR) targeting the 16S rRNA gene using EHR16S forward and reverse primers. The amplification protocol included an initial denaturation at 95°C for 2 minutes, followed by 40 cycles of denaturation at 95°C for 30 seconds, annealing at 54°C for 30 seconds, and extension at 72°C for 30 seconds, with a final extension at 72°C for 7 minutes. Amplified PCR products were analyzed using agarose gel electrophoresis. A 345-base pair (bp) amplicon specific for *Ehrlichia* spp. was detected in 5 out of the 34 samples, indicating a positivity rate of 14.7%. The positive PCR products have been sent for Sanger sequencing to confirm the identity of the amplified products and enable species-level identification. The detection of *Ehrlichia* DNA demonstrates that monkeys in this setting are exposed to tick-borne infections, likely through contact with infected vectors in their natural habitats or during rehabilitation. The detection of *Ehrlichia* DNA suggests either active infection or recent exposure, and the absence of clinical correlation in this study raises the possibility of subclinical infections. The presence of positive cases also suggests that monkeys may act as incidental hosts or potentially contribute to the maintenance of the pathogen within the environment. Given the close interface between wildlife, domestic animals, and humans in such regions, these findings highlight a potential risk for cross-species transmission and underline the epidemiological importance of monitoring tick-borne pathogens in wildlife populations. In conclusion, this study provides baseline molecular evidence of *Ehrlichia* infection in monkeys in Sri Lanka and emphasizes the need for further research, including sequencing for species identification and expanded surveillance, to better understand transmission dynamics and associated zoonotic risks.

Keywords: *Ehrlichia*, *Haemoparasites*, *Wildlife*

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A Study of the Microscopic Anatomy of the Skin of Koi (*Cyprinus rubrofasciatus*)

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The skin of koi (*Cyprinus rubrofasciatus*) is vital for hydrodynamics, immune defense, sensory perception, and pigmentation, yet comprehensive histological studies are limited. This study aimed to characterize the microscopic anatomy of koi skin, focusing on the detailed architecture of the different layers and their specific cell types. Skin samples were collected bilaterally from the dorsal, lateral and ventral regions across the cranial, middle and caudal regions of the body of adult koi (n=4) were processed using standard techniques. Histologically, the koi skin was composed of the epidermis, dermis and hypodermis. Bony scales resided within vascularized dermal pockets anchored by collagen fibers and showed collagen-based spines on their upper surfaces. These scales were covered by the epidermis, which was thicker on the dorsal side than on the ventral side. The epidermis was stratified squamous non-keratinized with number of cell layers increasing from 4–5 at the scale pocket to 6–7 at the distal end of the scale with average thickness of $33.4 \mu\text{m} \pm 5.76$. Goblet cells were the most abundant cell type (12 cells/100 μm length). The large eosinophilic club cells were restricted to the upper layers of the epidermis while eosinophilic granular cells were present in the basal layers of the epidermis and in the dermis. Pear-shaped taste buds were identified within superficial epidermal layers, whereas tubercles containing superficial neuromasts were located deeper. The nuclei of the sensory cells of the taste buds were located basally, whereas those in tubercles were positioned apically. The dermis with average thickness of $350.3 \mu\text{m} \pm 56.99$ was stratified into an outer stratum lucidum and an underlying dense collagenous stratum compactum. The hypodermis consisted of loose connective tissue with adipocytes. The thickness of the different layers of the skin was not differ significantly across different regions of the body. The lateral line system featured a continuous longitudinal canal, housing canal neuromasts specifically clustered at the ventro-caudomedial region of the canal. Blood vessels and nerve bundles were positioned beneath these sensory organs within the dermis. The findings of this study provide essential baseline anatomical data for the skin of koi.

Keywords: *Koi, Skin, Neuromasts, Scale, Taste Buds*

Topographic, Macroscopic and Microscopic Study of The Liver and Pancreas of Koi (*Cyprinus rubrofasciatus*)

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Koi (*Cyprinus rubrofasciatus*), belonging to the family *Cyprinidae*, are increasingly becoming a promising species in local aquaculture ventures. Despite their growing commercial relevance, fundamental anatomic knowledge of visceral organs such as the liver and pancreas remains poorly documented, creating a significant gap in veterinary and aquaculture science. Therefore, this study investigated the topographic, macroscopic, and microscopic anatomy of the liver and pancreas in healthy adult koi obtained from a koi breeder farm. (n=8) through dissection and histology, following staining of separate liver and pancreatic tissue sections with Hematoxylin and Eosin (H&E), Periodic Acid-Schiff (PAS), Masson's Trichrome, Gomori Silver and Oil Red stains. Topographically the liver was found to be a prominent, multi-segmented organ occupying nearly one-third of the total abdominal length, dispersed among surrounding viscera including intestinal loops. There are two distinguishable large liver segments present in most cranial aspect of the abdominal cavity on left and right sides, caudal to the septum transversum. In fresh state, the liver is red-brown in colour. The parietal surface is smooth and slightly convex and the visceral surface is associated with impressions of abdominal organs such as the intestinal dilation, spleen, and gall bladder. The gall bladder is located between liver and cranial intestine in right side. Unlike mammals, microscopically the liver showed no lobular arrangement or classical portal triads. Hepatocytes were arranged in irregular radiating cords around central veins. Notably, Kupffer cells were absent. Hepatocytes were hexagonal and has centrally located spherical nuclei. The cytoplasm predominantly lipid-laden with comparatively little glycogen. No macroscopically distinct pancreatic tissue was identifiable. Microscopically, pancreatic tissue occurred in both intrahepatic and disseminated forms. The disseminated type pancreatic tissue generally diffusely spread within the mesenteries. The exocrine pancreatic tissue composed of pancreatic acini; the acini cell arrangement in two cell layers and they encircle the portal vein or venules. The acinar cells showed basal basophilia with apical acidophilic zymogen granules indicating active digestive enzyme synthesis. Endocrine islets of Langerhans were nestled within the exocrine tissue, enclosed by thin layer of connective tissue, and were richly vascularized. These findings establish a valuable anatomical reference for koi liver and pancreas.

Keywords: *Exocrine Pancreas, Hepatopancreas, Histology, Islets of Langerhans, Koi*

Disease Surveillance for the Detection of *Enterocytozoon hepatopenaei*, White Spot Syndrome Virus, Acute Hepatopancreatic Necrosis Disease, and Infectious Hypodermal and Haematopoietic Necrosis Virus in Selected Shrimp Farms in North-Western Province

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Shrimp aquaculture supports the export market, employment, and economic growth in Sri Lanka. However, inappropriate farming practices have led to severe losses due to the spread of diseases. Active surveillance for four important shrimp diseases, one parasitic disease, *Enterocytozoon hepatopenaei* infection (EHP); one bacterial disease, Acute Hepatopancreatic Necrosis Disease (AHPND), and two viral diseases, White Spot Syndrome Virus (WSSV) infections, and Infectious Hypodermal and Haematopoietic Necrosis Virus (IHHNV), was conducted in 18 selected shrimp farms located in the coastal belt of the North Western Province of Sri Lanka from June to November 2025. A total of 67 ponds from 18 farms were included in the survey. The surveillance aimed to determine the prevalence of these four diseases, for which current data is lacking in Sri Lanka. A total of 3,900 live shrimp samples were collected from 16 *Litopenaeus vannamei* farms and two *Penaeus monodon* farms over two consecutive production cycles, for molecular detection of EHP, WSSV, AHPND, and IHHNV. Sixty shrimp were collected biweekly from a maximum of three ponds per farm, proportionate to the stocking densities of ponds. Priority was given to moribund shrimp or shrimp exhibiting abnormal behaviour to ensure early detection of potential disease outbreaks. Following external examination, ten shrimp were pooled for DNA extraction. DNA was extracted from gills, gut and hepatopancreas using DNeasy Blood & Tissue kits (Qiagen) according to the manufacturer's instructions. Polymerase chain reaction (PCR) was performed following OIE guidelines. Amplified DNA products were visualized by gel electrophoresis using 1.5% agarose. *Litopenaeus vannamei* samples were collected from sub-zones of Madampe (1/18), Ambakandawila (7/18), Bangadeniya (1/18), Karamba (1/18), Kottantivu (1/18), Madurankuliya (2/18), Pulichchikulama (1/18), Sevvanthivu (1/18), and Udappuwa (1/18). *Penaeus monodon* samples were collected from Ambakandawila (2/18). Gross examination revealed size variation, empty gut, bent back, pale body colour, and white patches. Molecular analysis confirmed the presence of EHP in all sampled farms (100%) and WSSV in 11.11% (2/18) of farms, whereas AHPND and IHHNV were not detected in any of the sampled shrimp farms. EHP was detected in all tested ponds in 13 farms and in one or two tested ponds in 5 farms. Co-infection with EHP and WSSV was observed in four ponds (1 pond in one farm and three ponds in another farm) (5.97%; 4/67). In conclusion, EHP is widely spread among shrimp farms in the North Western Province of Sri Lanka. Two WOA-listed diseases; Acute Hepatopancreatic Necrosis Disease (AHPND) and Infectious Hypodermal and Haematopoietic Necrosis Virus (IHHNV) were not detected in the surveyed farms. An island-wide surveillance programme with representative sampling is recommended to determine the national distribution of these diseases and support the implementation of appropriate measures to control WSSV and EHP infections in shrimp farms in Sri Lanka.

Keywords: *Shrimp Disease Surveillance, EHP, WSSV, AHPND, IHHNV, North-Western Province*

Acknowledgement: This study was funded by the Smart and Sustainable Aquaculture through Effective Biosecurity and Digital Technology Project (GCP/GLO/086/ROK) of the Food and Agriculture Organization (FAO), Colombo, Sri Lanka.

Enrichment of Degraded Elephant Habitats with Preferred Browsing Plant Species- A Pilot Study

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The elephant habitat enrichment programs implemented by Department of Wildlife Conservation were mainly focused on the removal of alien invasive plant species to create the space for the edible plant species. When the space for edible plant species increases, grazing pressure from livestock increases and the ultimate objective was not achieved. Most of the elephant habitats in national parks have degraded. This pilot study focused to enrich the degraded range areas of elephant. The study was conducted in two selected sites in Udawalawe National Park, Sri Lanka. Each experimental site, comprising 2–3 km road stretch with an approximate width of 20m, with dense shrub vegetation were preferentially chosen to provide natural protection against browsing by domestic livestock and wild herbivores. Propagating *Ficus virens* (Ahetu) on nonedible, invasive, introduced or dying trees as supportive host plants were trialed. Planting was carried out at the onset of the monsoon rains twice a year, 200 numbers in 2024 and 200 numbers in 2025, in four occasions in which over 30 varieties of plants and creeper species. Plants were tagged and GPS coordinates obtained for monitoring. The survival rate of the plants had been monitored after 6 to 10 months. An overall survival rate of 10% was recorded during the first year. The surviving plants are expected to contribute to ecological succession and increase plant diversity within the degraded habitats. *Ceiba pentandra* (Pulun Imbul) showed a survival rate of 15.21%, while *Terminalia arjuna* (Kumbuk) exhibited the highest survival rate at 28.57%. None of the *Madhuca longifolia* (Mee) or *Trema orientalis* (Gadumba) plants survived. Low survival rates may have resulted from browsing pressure, the small size of the planting material, and prolonged drought conditions lasting two to three months. In 2025, several adaptive management measures were adopted, including the use of taller plants (>3.5 ft), selection of more suitable species, and planting during periods of adequate rainfall at the onset of the monsoon season. Monitoring of the plants is ongoing. Although the initial survival rates were lower than expected, adaptive management interventions and further refinements in planting strategies are expected to improve the long-term success of this habitat enrichment program.

Keywords: Degraded Range Areas, Elephant Habitat, Edible Plant Species, Survival Rate, Udawalawe National Park

**Potential Zoonoses from Monkeys (*Toque macaque*) in Sri Lanka:
Malaria, Dengue, Chikungunya, Mpox, Herpes B and Syphilis**

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Toque macaque (*Macaca sinica*), an endemic primate species in Sri Lanka is thought to carry zoonotic agents. Since they are genetically related to humans, they enhance the potential spill over of any such zoonotic agent. There is no surveillance data on zoonotic agents in Toque macaque population in Sri Lanka. During a field study in the fruit plantation belonging to Ellawela Horticulture Pvt. Ltd. in the North Central Province, blood samples were collected from monkeys after bait trapping and were subjected to laboratory testing for the respective disease-causing agents or their antibodies. Whole blood, serum and urine samples were collected after sedation of monkeys, stored and transported appropriately to laboratories in the Universities of Peradeniya, Colombo, Sri Jayawardenapura and to GENETECH Pvt Laboratory, Colombo. The emerging zoonotic potential of Mpox, Hepatitis B and Syphilis has been recently established. Mpox has been reported from a child in Colombo, and methods for testing for any of these three agents have not yet been established in the state sector for monkeys. Out of 70 samples tested for Dengue using ELISA, 38 were positive for IgG. Through LUMINEX testing 21, 5 and 1 samples were tested positive for DEN1, DEN 2, and DEN 3 antigens, respectively, while 13 were positive for multiple dengue antigens. LUMINEX testing was again incorporated into screening for Chikungunya antibodies, with 4 samples testing positive out of 78. A total of 23 samples were tested for the *Plasmodium* genus. Preliminary data indicate the presence of *Plasmodium* spp., and further investigations are underway to confirm the species identification. None of the five samples tested were positive for Mpox, Herpes B or Syphilis so far. The findings reveal that local monkeys carry or have been exposed to potential zoonotic agents. Therefore, the role of monkeys as carriers of zoonotic agents and their ability to transmit them to humans must be seriously considered. This also highlights the importance of active zoonotic disease surveillance in animals to assist disease control measures.

Keywords: Monkey, Malaria, MPox, Herpes B, Syphilis, Dengue, Chikungunya

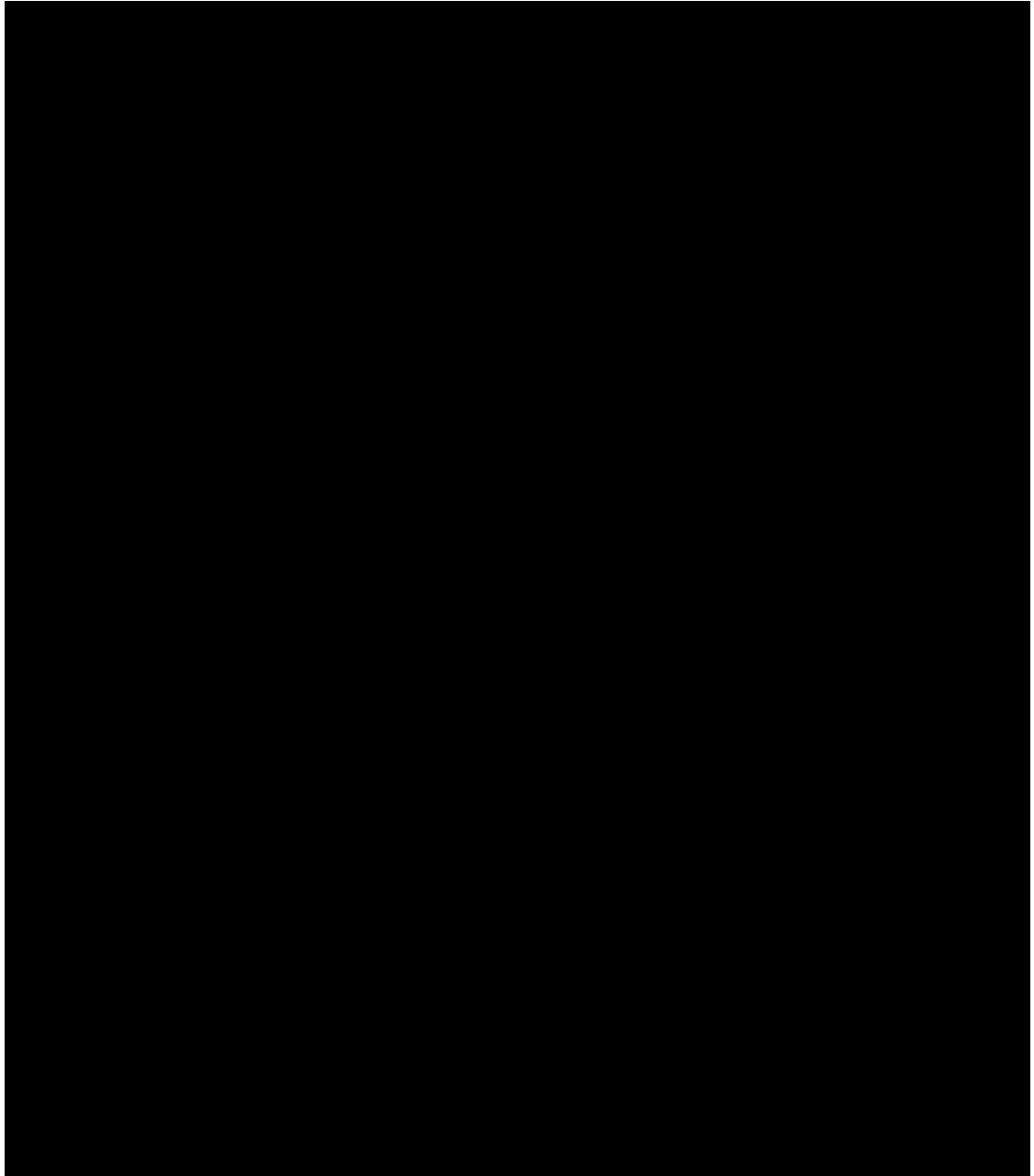
Acknowledgements: This work was partially funded by NARP/2025/UP/VS/01

Effects of Environmental Variation on Body Condition and Gastrointestinal Parasitism in a Captive Spotted Deer (*Axis axis ceylonensis*) population in Sri Lanka

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Veterinary Intervention and Rehabilitation Success of a Rescued Leopard (*Panthera pardus kotiya*): In Conservation Practice

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The Sri Lankan leopard (*Panthera pardus kotiya*), an iconic endemic subspecies classified as endangered, highlights the importance of its conservation. Currently, its population is adversely affected by illegal human activities, habitat destruction and forest fragmentation. The widespread use of wire snares represents a significant threat to wildlife populations for most wild species, including leopards. An emergency rescue operation was carried out on a one-year-old female leopard cub caught in a snare in October 2026 at Kuruduwatta, Gampola. The animal was found with an open fracture of the right hind limb due to strangulation. Snares were removed and animal was stabilized under general anesthesia. Radiographic examination revealed right distal tibial and fibular physal fractures. It was corrected using a K wire under general anesthesia. Although the wound caused by the tightened wire loop appeared insignificant initially, it progressed to necrosis and sloughing off of the skin within a few days. Veterinary care including post-operative wound management, infection control, supportive care and constant close observation was executed until the cub exhibited sufficient confidence to survive in its natural habitat with proper posture and hunting behaviours. Following seven months of veterinary management and rehabilitation, the leopard was fitted with a GPS telemetry collar incorporating a drop-off mechanism and subsequently released at a selected location. Post-release monitoring was conducted using GPS telemetry data and remote camera traps to assess the animal's adaptation to the new habitat. Despite the relocation site presenting suitable habitat characteristics and comparable climatic conditions, GPS telemetry data recorded an eastward displacement of approximately 6 km across the adjacent mountain range within one week of release, indicative of active home range establishment. Within two months post-release, the leopard had successfully established a stable home range within an ecologically comparable habitat, demonstrating successful rehabilitation and adaptation to the wild. According to the literature, age and sex are key factors for apex predators such as *Panthera pardus kotiya*, determining survival after severe injuries and the ability to acquire new territory. In addition to indicating the potential for successful rehabilitation of apex predators in Sri Lanka, this communication highlights ex-situ treatments, relocations and post-release monitoring practised, encouraging leopard conservation strategies.

Keywords: *Panthera pardus kotiya*, GPS Telemetry Collar, Apex Predators, Relocation

Severe Meningoencephalitis in a Ring-Tailed Civet (*Viverricula indica*) with Concurrent Hepatic Capillariasis: A Case Report

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Central nervous system (CNS) disorders in wild carnivores can arise due to many aetiologies, with infectious agents accounting for a significant proportion of cases. In Sri Lanka, these animals presenting with nervous signs are routinely screened for rabies virus due to its major public health importance. This case presents several important findings, such as animal tested negative for rabies but demonstrated inclusion bodies in neurons suggestive of viral meningoencephalitis along with concurrent histological evidence of hepatic parasitic infestation similar to *Capillaria* spp. The reported scientific literature on such parasitic infestations is rare, especially in civets emphasizing the need for further investigations into potential factors facilitating coinfections. The animal was a 16 kg adult male Ring-Tailed Civet kept in rural captivity for two weeks. Initially the animal exhibited lethargy and loss of appetite, followed by progressive neurological signs including ataxia, circling, incoordination and bilateral hind limb paralysis. The animal died following rapid progression of the neurological signs. Necropsy examination revealed gross lesions such as cerebral oedema and diffuse haemorrhages. The lungs showed diffuse congestion with multiple hemorrhagic foci and bronchi filled with frothy secretion. The liver showed hepatomegaly with scattered small, firm, white gritty nodules and firm and pale areas suggestive of mild fibrosis. Histopathology of the brain showed lesions suggestive of viral meningoencephalitis, intranuclear, basophilic inclusion bodies in neurons and neuroglia, neuronophagia, brain oedema and congestion. The liver demonstrated severe fatty changes, and multiple nematode eggs within the parenchyma. Eggs were morphologically consistent with *Capillaria* spp., being oval to barrel shaped with thick, smooth, double contoured shells, distinct bipolar opercula, and granular contents. The lungs showed extensive haemorrhages, pneumonia, bronchitis, and bronchiolar degeneration. The CNS lesions caused neurological manifestations and death. The hepatic capillariasis observed in this case is likely incidental, while pulmonary lesions are most likely complications associated with the viral meningoencephalitis. This rare finding highlights the importance of studies of neglected parasitic infections in wildlife, including *Capillaria* spp., because of the close interactions of civets with humans and the role of rodents as reservoir hosts.

Keywords: *Hepatic Capillariasis, Meningoencephalitis, Ring-Tailed Civet, Wildlife Pathology Zoonotic Parasites.*

Tracking Antimicrobial Resistance in *Escherichia coli* along the Beef Chain: From Cattle Farms to Retail Meat

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Foodborne pathogens and antimicrobial resistance (AMR) are major public health challenges in the 21st century. The emergence of AMR in zoonotic and commensal bacteria such as *Escherichia coli* (*E. coli*) increases the risk of transmission from animal-derived foods to humans through the meat production chain. This study examined the occurrence and resistance patterns of *E. coli* along beef chain in Kandy district, Sri Lanka. A total of 42 fecal, 42 wastewater, and 45 meat samples were collected from dairy farms in selected Veterinary Surgeon's Divisions and beef markets. From the samples, *E. coli* were isolated using standard microbiological procedures and confirmed genotypically by PCR targeting 16S rRNA gene specific to *E. coli*. Among fecal samples, 34 (79.1%) isolates were phenotypically identified as *E. coli*, while 33 (76.7%) were geneotypically confirmed. From waste water samples, 29 (67.4%) isolates were confirmed as *E. coli*. In beef samples, 35 (77.8%) isolates were phenotypically positive, with 34 (75.6%) confirmed geneotypically. Thereafter, antimicrobial susceptibility testing (AST) was performed for genotypically confirmed isolates for eight antimicrobials. Fecal isolates revealed higher susceptibilities to amikacin (96.8%), gentamicin (96.8%), ceftriaxone (93.7%), ciprofloxacin (90.6%), tetracycline (71.8%), streptomycin (68.7%). Wastewater isolates exhibited strong susceptibility to amikacin (100%), gentamicin (100%), ciprofloxacin (93.1%), trimethoprim-sulfamethoxazole (86.2%), with moderate susceptibility to ceftriaxone (86.2%), streptomycin (69%). The highest resistance (51.7%) was observed for ampicillin. Meat isolates revealed the highest susceptibility to amikacin and gentamicin (100%), ceftriaxone (97.1%), ciprofloxacin (94.1%), and trimethoprim-sulfamethoxazole (88.2%). Moderate susceptibilities were reported for streptomycin (76.5%), tetracycline (73.5%). Among all isolates, strong susceptibility was observed for amikacin and gentamicin, whereas ampicillin consistently showed the highest resistance. Collectively, the results suggest the widespread presence of *E. coli* along the beef chain in Sri Lanka and reveal significant patterns of resistance and susceptibility to several antibiotics. Comparing previous studies done on *E. coli* from other livestock, the current study highlights the lower levels of resistance against many antimicrobials. However, AMR is emerging in dairy cattle and beef industry. Therefore, the present study emphasizes the urgent need for continuous surveillance, prudent antibiotic use, and integrated strategies to mitigate the public health risks posed by antimicrobial-resistant foodborne pathogens.

Keywords: AMR, *E. coli*, 16srRNA, Antimicrobial Drugs, Foodborne Pathogens

Assessment of Urea Adulteration in Milk: Effects on Composition and DMAB Test Sensitivity

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Raw milk adulteration is a significant food-safety concern worldwide; urea is a commonly reported adulterant in several countries, including Sri Lanka, where it may be added intentionally to increase milk density and mask dilution with water. Although urea occurs naturally in milk at low concentrations from bovine metabolism, levels above 0.07% are generally considered suspicious and may reflect adulteration or dietary imbalance. Excessive urea intake poses health risks especially for pregnant women, young children, the elderly, and people with renal impairment, making reliable detection of urea adulteration a public-health priority. This study evaluated the effects of graded urea adulteration on milk composition and assessed the sensitivity of the 1,4-dimethyl-amino-benzaldehyde (DMAB) colorimetric test for urea detection. Raw milk samples were spiked with urea at 0.01%, 0.02%, 0.05%, 0.07%, 0.1%, 0.3%, 0.5%, 1%, 3%, and 5% (w/v) and compared with an untreated control. Samples were analyzed for ethanol stability (using 68%, 70%, 72%, and 74% ethanol), fat content (Gerber method), specific gravity (lactometer), solids-not-fat (SNF; subtracting fat from total solids - AOAC 990.20), and protein (Kjeldahl method). The DMAB assay was used to evaluate colorimetric detection thresholds. Each treatment was prepared and analyzed in triplicate. Urea addition produced no changes in ethanol stability or fat percentage ($P>0.05$) across the tested range. In contrast, specific gravity, SNF, and protein increased progressively with higher urea concentrations. At 1% urea, specific gravity and SNF increased by approximately 10% relative to control; at 5% urea these parameters rose by roughly 46% and 35%, respectively, indicating considerable potential to conceal dilution via water addition. Protein content showed pronounced increases: 42% at 0.5% urea, 73% at 1% urea, and 342% at 5% urea. The DMAB colorimetric test produced a clear color change only at concentrations exceeding 0.05% urea, indicating limited sensitivity at lower concentrations. Because Sri Lankan milk prices are set mainly by fat and SNF, and protein content is not accounted for, the observed effects of urea create conditions that favor water adulteration to fraudulently raise milk volume. These findings underscore the need for routine, sensitive urea screening, stronger regulatory enforcement, and targeted public-health actions to protect consumers and preserve milk quality.

Keywords: Milk Adulteration, Urea Detection, Protein, Specific Gravity

Effect of Chicken Juice on the Biofilm Formation Capacity of *Campylobacter jejuni* and the Effectiveness of Disinfectants on Biofilms

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Campylobacter jejuni is a primary poultry foodborne pathogen transmitted through consumption of contaminated poultry meat. Regardless of the fastidious nature of *C. jejuni*, its persistence in the food chain is significant. *C. jejuni* uses specific survival mechanisms, such as biofilms, to survive under the stresses in food processing. Further, the biofilms reduce the effectiveness of sanitizers used in poultry processing. To date, most studies on *C. jejuni* biofilms have been performed in the laboratory, which do not mimic the conditions in the processing environment. Therefore, here we used “chicken juice”, which is the exudate that leaks from raw, defrosted poultry, to allow accurate extrapolation of laboratory results to the food industry. We investigated the effect of “chicken juice” on biofilm formation of *C. jejuni* and the effectiveness of disinfectants in breaking biofilms. Single-species *C. jejuni* ($n=20$) biofilms and multi-species biofilms with *Salmonella* Typhimurium were established using polystyrene plates with nutrient broth and “chicken juice”. The established biofilms were stained using crystal violet and measured by spectrophotometry. Both single and multi-species biofilms were treated with 1% citric acid and 40 ppm chlorine, and the residuals were measured. Whole genomic sequencing was done by DNBSEQ platform to determine the biofilm formation and disinfectant resistance traits in *C. jejuni*. The data were statistically analysed by one-way ANOVA using GraphPad Prism (V8.0.1). The results revealed that the biofilm formation in the presence of “chicken juice” was significantly higher ($p<0.001$) than in the nutrient broth and comprised a significant strain variation. The multispecies *C. jejuni* biofilms with “chicken juice” exhibited the highest biofilm-forming capacity ($p<0.001$) and showed higher stability in sanitizer treatments. Further, the effectiveness of chlorine on biofilms was significantly lower ($p<0.001$) compared to that of citric acid. Whole-genome sequencing elucidated the presence of key genes in biofilm development: *proA*, *cmeA*, *cmeC*, and *cmeR* in *C. jejuni* isolates. “Chicken juice” acts as a nutrient source and creates a protective coating on abiotic surfaces, allowing *C. jejuni* to survive. Moreover, expression of the main CmeABC pump genes related to biofilm formation confers acquired resistance of *C. jejuni* to sanitizers and antimicrobials. As “chicken juice” promotes the rapid formation of biofilms, especially with the presence of other foodborne pathogens such as *Salmonella*. Thorough cleaning and sanitizing is critical to prevent cross-contamination during processing to reduce the public health risk.

Keywords: *Chicken Juice, Campylobacter jejuni, Biofilms, Disinfectants, Resistant Genes*

Aflatoxin Contamination in Cow Milk and Concentrate Cattle Feed in Selected Veterinary Surgeon's Divisions in Anuradhapura District

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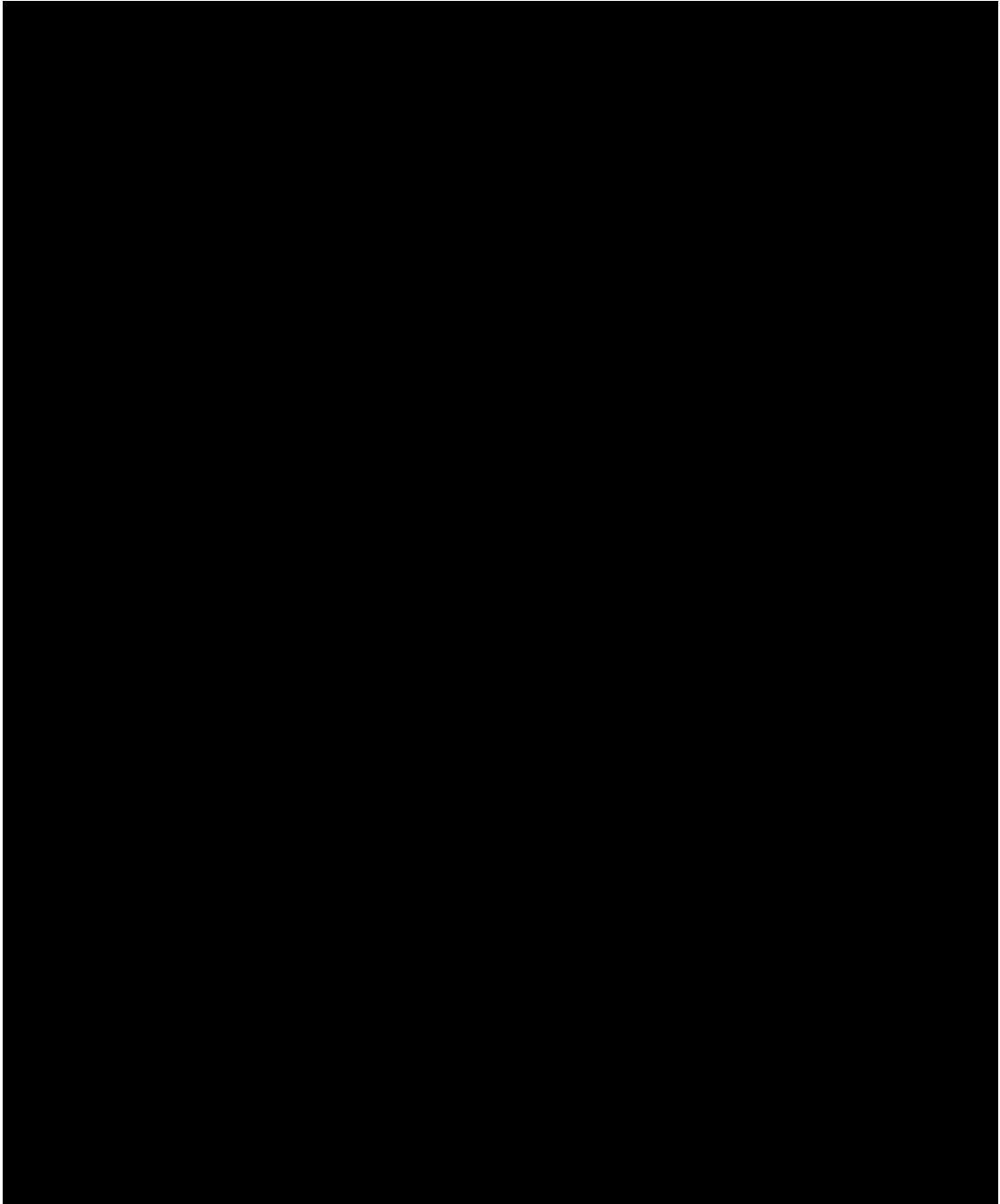
Aflatoxins are potent mycotoxins produced mainly by *Aspergillus flavus* and *A. parasiticus*, adversely affecting animal productivity and public health through feed–milk transfer. This study assessed aflatoxin contamination levels in concentrate cattle feed and milk, alongside the correlation between feed and milk contamination across, six Veterinary Surgeon's Divisions (VSDs) in Anuradhapura District: Thambuttegama, Nochchiyagama, Rambewa, Thirappane, Central Nuwaragam Palatha (CNP) and Eastern Nuwaragam Palatha (ENP). Data collection spanned from May to October 2025. Using Simple random sampling design, 59 feed samples and 50 individual cow milk samples (47 valid) were collected from 10 farms within each VSDs, analyzed using Neogen Reveal Q+ Max Total Aflatoxin test (AFB₁ + AFB₂ + AFG₁ + AFG₂) for feed and Neogen Reveal Q+ for AFM₁ for milk. Selected samples were cross-validated at the Veterinary Research Institute (VRI), Peradeniya, confirming field-level accuracy within $\pm 5\%$. Aflatoxin levels exceeded national maximum permissible limits in 36.2% of milk samples (> 0.05 ppb) and 15.3% of feed samples (> 20 ppb). After removing two statistical outliers the mean value of AFM₁ in milk was 0.034ppb and SD was 0.043ppb. Total Aflatoxin in feed exhibited a mean concentration of 5.66ppb and SD 10.71ppb respectively. The highest individual concentration of AFM₁ (0.956 ppb) was detected at CNP, whereas the maximum Total Aflatoxin in feed (42.2 ppb) was recorded at ENP. A moderate positive correlation ($r = 0.51$) was observed between feed and milk Aflatoxin contamination levels, However, several instances of elevated milk contamination occurred despite low feed toxicity levels, pointing toward potential alternative or cumulative dietary sources. Most commercially available concentrate cattle feeds maintain low Aflatoxin levels through toxin binders; however, rumen degradation may release bound toxins, potentially contributing to AFM₁ formation. Further investigation into this mechanism is recommended. These findings highlight the critical need for continuous monitoring, proper feed management, and farmer awareness to ensure safe milk production and public health in Sri Lanka.

Keywords: Aflatoxin, Anuradhapura District, Feed Contamination, Milk Safety

From Endemic Plateau to Elimination Threshold: A Critical Analysis of Sri Lanka's National Rabies Control Program, 1970–2025

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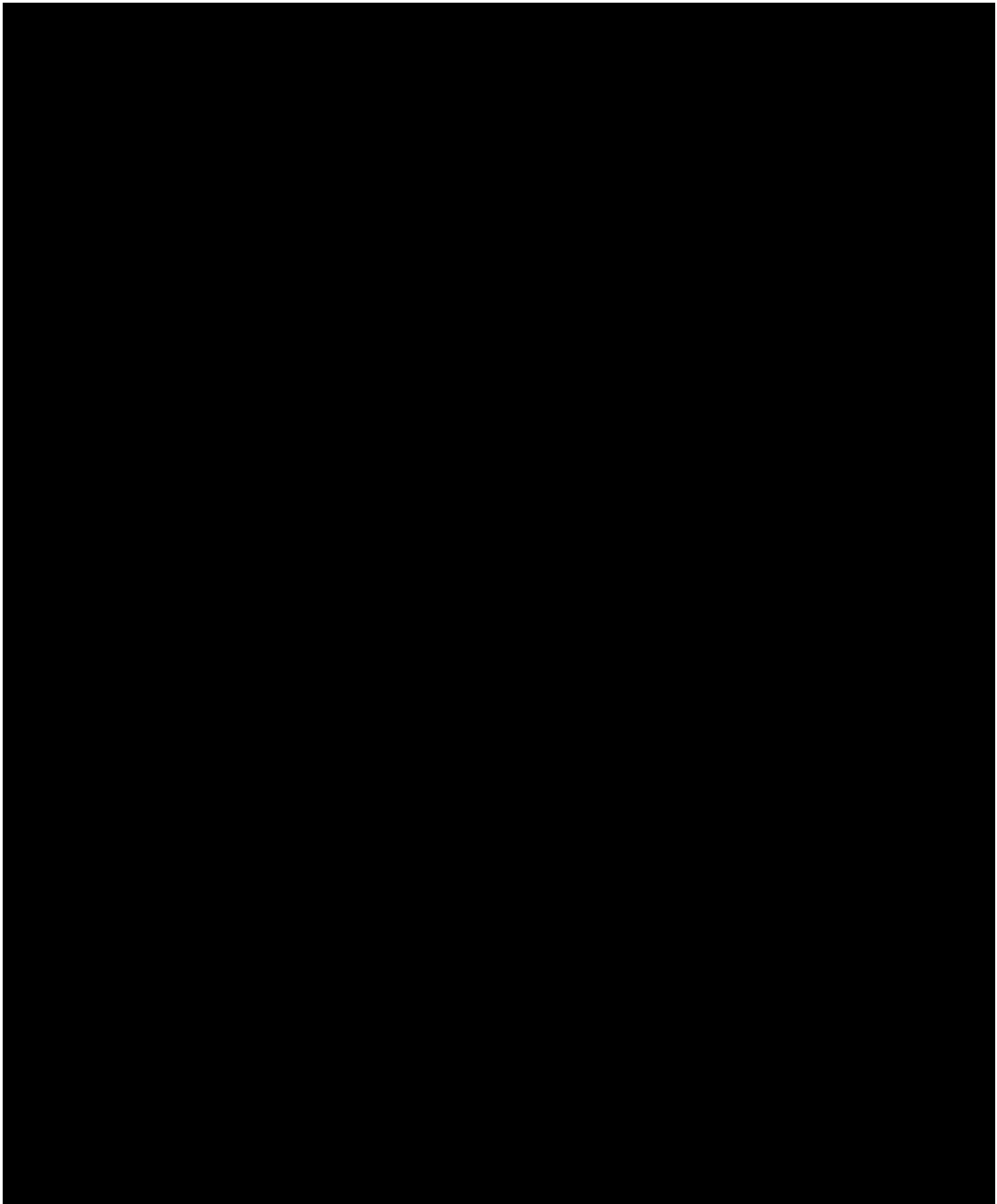
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**Temporal Associations Between Dog Vaccination Coverage, Anti-Rabies
Vaccine Utilization, and Human Rabies Mortality in Sri Lanka:
A 55-Year Time-Series Analysis (1970–2025)**

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Exploring the Public Perception towards Free-roaming Dogs, Rabies Eradication, and Population Management Strategies in Four Selected Regions of Anuradhapura, Sri Lanka

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Free-roaming dogs are abundant in the Anuradhapura municipality due to the dumping of puppies. Vets for Future, the Anuradhapura Municipal Council and Justice for Animals conducted a five-year Catch, Neuter, Vaccinate, Release programme. A Likert-scale-based survey was conducted at its conclusion to explore public opinion on free-roaming dog population management and rabies eradication. It received 1,020 responses from 1687 pet owners visiting the mobile clinics in the Anuradhapura Municipality and three neighbouring local government divisions from 28/09/2025 to 10/10/2025, with a response rate of 60.46%. The percentage of respondents who fully perceived a regional increase in the stray population (61.5%) was significantly lower ($p < 0.01$) than that of those who fully agreed that the stray population of Sri Lanka was increasing (70.7%). The concern regarding the rabies risk associated with strays (77.6%) was significantly greater ($p < 0.01$) than the concerns about causing traffic accidents (70.9%) and pollution (73.1%). Over 93% of respondents agreed (74.8% fully and 18.5% partially) that the government should manage the dog population. Humane and scientific measures, such as promoting sterilisations (71.9%), waste management (77.4%), legal action against owners for free-roaming (73.8%) and dumping (75.1%) were preferred, and over 78.3% fully and 12.8% partially rejected culling. Shelters had a mixed perception. Despite 67.7% fully agreeing, 9.61% expressed uncertainty by choosing “No idea”; the highest percentage of “No idea” for all the options suggested. While 65.1% fully and 12.6% partially disagreed with banning public feeding, 71.5% fully and 19.1% partially agreed to regulating it. The majority of respondents (74.7%) fully agreed that anti-rabies vaccinations should be coupled with sterilisations for effective rabies eradication. The majority fully agreed that the government should fund free anti-rabies vaccination (82.3%) and sterilisations (87.2%). When asked to rate their satisfaction with the two programmes separately, a significantly higher percentage of respondents ($p < 0.01$) reported complete satisfaction with the Vets for Future programme (89.9%), compared to those who were completely satisfied with the government programme (54.9%). However, there was no significant correlation ($p > 0.05$) between satisfaction with either programme and the public’s attitude towards culling or a ban on public feeding.

Keywords: *Humane Dog Population Management, Rabies Eradication, Shelters, Public Policy, Waste Management*

Granulomatous Cholangiohepatitis associated with Aberrant Migration of Immature Paramphistomes in Goats: a case report

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Trematodes are snail-borne parasites commonly encountered in wet grazing environments of ruminants. *Paramphistomum* spp. are typically found in the rumen of affected animals, while immature stages attach to the duodenal mucosa and cause enteritis and irritation during migration. Aberrant migration of immature paramphistomes into the liver and biliary system is uncommon and may induce severe granulomatous inflammation leading to cholangiohepatitis in goats. This case series describes the gross and histopathological findings in four goats diagnosed with granulomatous cholangiohepatitis associated with immature paramphistome migration. During postmortem examination at the Colombo abattoir in 2025, multifocal, well-demarcated hepatic nodules approximately 1 cm in diameter were observed in affected goats, while one goat additionally showed similar lesions in the lung. Liver tissues were fixed in 10% neutral buffered formalin, routinely processed, sectioned, and stained with hematoxylin and eosin at the Faculty of Veterinary Medicine and Animal Science, University of Peradeniya. Histopathological examination revealed well-organized granulomas containing cross-sections of trematode parasites morphologically consistent with immature paramphistomes. Granulomas were composed of Langhans giant cells, macrophages, lymphocytes, and numerous eosinophils, and were frequently associated with bile ducts showing degeneration and hyperplasia. Interestingly, immature paramphistomes were also observed within hepatic blood vessels, accompanied by endothelial swelling, leukocyte adhesion, vascular congestion, and inflammatory cell sequestration, indicating vascular injury associated with active parasitic migration. The presence of intravascular immature paramphistomes is an unusual finding and may represent an important pathway for aberrant systemic migration. The gross and histopathological findings strongly support granulomatous cholangiohepatitis associated with possible aberrant migration of immature *Paramphistomum* spp. in goats. However, species-level identification remained presumptive as confirmation by parasite morphometrics was not performed. Therefore, immature paramphistomiasis should be considered among the differential diagnoses of granulomatous hepatobiliary disease in goats.

Keywords: Aberrant Migration, Cholangiohepatitis, Goats, Granulomatous Inflammation, Intravascular paramphistomes, *Paramphistomum* spp.

A Comparison Between the Anti-Rabies Vaccination Rates and Sterilization Rates Between Owned Cats and Dogs in Anuradhapura, Sri Lanka

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Dogs cause 95% of human rabies cases worldwide and are prioritised in rabies eradication. However, cat-mediated human rabies cases are reportedly increasing in Sri Lanka. A questionnaire survey was conducted from 28th September to 10th October 2025 within the Anuradhapura Municipality and three neighbouring local government areas, after a five-year rabies eradication and dog population management programme, to compare ownership, sterilisation, and rabies vaccination patterns for cats and dogs. Chi-square tests and a general linear mixed model were used in the statistical analysis. The response rate was 68.34%, with 1153 responses collected from 49 clinics. Dog-only households accounted for 50%, followed by 31% of mixed-pet households, and 19% of cat-only households, indicating a significantly higher probability for dog-only households than for mixed-pet or cat-only households ($p < 0.05$). Within a 95% CI, the households were likely to have only one cat and twice as many dogs, but the range of outliers was broader for cats. With 72.4% of dogs and just 46% of cats vaccinated annually against rabies, the probability of vaccination for cats was significantly lower than that for dogs ($p < 0.05$). The probability of sterilisation shows no significant difference between species, with 81% of adult female dogs, 79.7% of adult female cats, 42.4% of adult male dogs and 35.2% of male cats sterilised. The difference was significant ($p < 0.05$) between males and females of both species, with owners prioritising female sterilisations. A general linear mixed model revealed that the probabilities of annual vaccination and sterilisation increase significantly ($p < 0.01$) by 5% and 5.7%, for each additional cat living in a household. However, the variability between centres and the individual households was more prominent than the generalised effect of having multiple cats. These findings indicate that owners equally prioritise female sterilisations of both species, and the lack of awareness of the risk of cats transmitting rabies leads to low ARV vaccination rates in cats, and that ARV is a likely secondary outcome of sterilisation campaigns. This gap in understanding highlights the need for Sri Lankan veterinary and public health authorities to give due consideration to cats in future rabies eradication efforts.

Keywords: *Cat-mediated Rabies, Responsible Pet Ownership, Sterilization*

Notes



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