ICAVST 2026

CONFERENCE PROCEEDINGS

11th International Congress on Advances in Veterinary Sciences & Technics

One World, One Health



ESBioTech

Organized by Eurasian Society for Biotechnology (ESBioTech)

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11th International Congress on Advances in Veterinary Sciences & Technics (ICAVST 2026)

AKSARAY UNIVERSITY, TÜRKIYE | SEPTEMBER 2026

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İlker Camkerten

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PREFACE

Research is the cornerstone of societal progress and scientific innovation. The **11th International Congress on Advances in Veterinary Sciences & Technics (ICAVST)**, held on Aksaray, Türkiye, serves as a premier international platform bringing together academic scholars and industry professionals to exchange research results, foster interdisciplinary synergy, and catalyze innovation across life sciences and health technologies.

The **Eurasian Society for Biotechnology (ESBioTech)** is an international scientific association dedicated to connecting biotechnology communities across Eurafroasia. Driven by its core commitments to foster scientific collaboration, advance research-driven education, and promote science outreach for the betterment of humanity, ESBioTech organizes high-impact congresses (ICABB, ICAVST), publishes peer-reviewed research in the *Journal of Advances in VetBio Science and Techniques (VetBio Journal)*, and hosts specialized applications workshops.

Objectives:

- **Academic Platform:** To provide a world-class peer-reviewed forum for sharing innovative research findings.
- **Research to Education:** To integrate cutting-edge research outputs into academic curricula for student benefit.
- **Global Impact & Dissemination:** To address critical scientific challenges and facilitate high-quality publication in indexed journals and proceedings.
- **Constructive Feedback:** To offer collaborative review processes that enhance research quality, relevance, and global application.

ICAVST 2026 Congress Summary

This milestone edition convened participants representing **9 countries**: **Algeria, Indonesia, United Kingdom, Malaysia, Egypt, Bosnia Herzegovina, Nigeria, Azerbaijan and Türkiye.** Out of 63 registered scientific submissions, the Scientific Committee selected 27 peer-reviewed papers for formal presentation, comprising 24 oral and 3 poster presentations. We express our profound gratitude to our distinguished plenary and keynote speakers: **Prof. Dr. Hesham A. El Enshasy, Prof. Dr. Dr. Muhamed Katica,** and **Assoc. Prof. Dr. Ernesto Hernandez** for their invaluable contributions to the scientific program.

Special appreciation is extended to the members of the Organizing and Scientific Committees, ZENITH Group support team, and each individual author and delegate whose dedication made this congress a resounding success.

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Abbreviation - FVM: Faculty of Veterinary Medicin

*The list is alphabetized by the last name

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PRESENTATIONS & SCIENTIFIC ABSTRACTS

[O01] — ORAL PRESENTATION — ORIENTATION SPEECH

BIOECONOMY OF ANTIBIOTIC AND ANTI-INFECTIVE INDUSTRIES: CURRENT AND FUTURE TRENDS

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Antibiotics and anti-infectives are important components and an integrated part of human health care industries. Their purpose is to reduce the risk of human pathogens by their killing (Cidal) or stopping the growth (static) effect to prevent colonization of microbes as the first stage for causing diseases. Since their discovery and commercialization in the 1930s, antibiotics play an important role in saving lives of more than hundreds of millions of people. It has been reported that if antibiotics were not used in the treatment protocols during the second world war, the victims could be tripled. Antibiotics are biological metabolites mainly produced by microorganisms which have the capacity to inhibit the growth of microbes when applied at low concentrations (which differentiate it from other anti-infectives). However, based on the extensive uses of antibiotics in medical and non-medical uses, new classes of pathogens have been developed, which has the capacity to resist the antimicrobial effects of antibiotics. Additionally, most of the currently used antibiotics and anti-infectives cannot differentiate between the human natural microbiome (mainly probiotics) which play an important role in human health and other pathogens. Thus, they kill the first protection layer of our body which is very important for a vital life. Therefore, current research focuses on the development of a new class of natural anti-infectives which have the capacity to differentiate between pathogenic and non-pathogenic microbes and are able to inhibit the growth of antibiotic-resistant microbes as well. This orientation keynote lecture will provide an overview of the recent development of novel and selective anti-infectives and shows how this new group of metabolites can change the bioeconomy of the anti-infective market.

Keywords: *Antibiotics, Antimicrobial Resistance, Selective Anti-infectives, Human Microbiome, Natural Antimicrobial Metabolites*

[O02] — ORAL PRESENTATION — KEYNOTE SPEECH

ENGINEERING FUNCTIONAL BIOMATERIALS FOR ONE HEALTH: INTEGRATING FOOD, HUMAN HEALTH AND CIRCULAR BIOECONOMY

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The growing challenges of food insecurity, environmental pollution, and human health require engineering solutions that recognize the interconnectedness of food systems, people, and the environment. This is consistent with the One Health concept, which calls for multidisciplinary approaches to address global sustainability challenges. This keynote presents the evolution of functional biomaterials engineering from biopolymer research to the development of sustainable materials for food, health, and environmental applications. Recent work on renewable agro-resources demonstrates how agricultural biomass can be transformed into functional biomaterials for active and intelligent packaging, controlled delivery systems, and biodegradable composites, adding value to biological resources while reducing reliance on fossil-derived materials. The presentation also proposes an Agro Functional Biomaterials Engineering (AFBE) approach, integrating biomass valorization, material design, process engineering, and application development to advance sustainable solutions across food, human health, and the environment. Rather than treating food, health, and the environment as separate domains, AFBE emphasizes their integration through functional biomaterials designed for sustainable applications. The keynote concludes by discussing future directions in green processing, digital technologies, and interdisciplinary collaboration to accelerate the development of engineering functional biomaterials that contribute to resilient food systems, improved human well-being, and a circular bioeconomy.

Keywords: *Engineering Functional Biomaterials, One Health, Circular Bioeconomy, Agricultural Biomass, Sustainable Materials*

[O03] — ORAL PRESENTATION — KEYNOTE SPEECH

FREE-ROAMING DOG POPULATION IN MONTENEGRO FROM THE PERSPECTIVE OF LOCAL VETERINARIANS: AN ASSESSMENT OF POPULATION SIZE AND WELFARE CONDITIONS IN DOG SHELTERS

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Free-roaming dog (FRD) populations present major public health, animal welfare, and municipal management challenges across South-Eastern Europe. In Montenegro, informal estimates suggest significant FRD numbers, but comprehensive quantitative evaluations and veterinary assessments of shelter infrastructure and welfare standards remain limited. This study aimed to evaluate the free-roaming dog population dynamics and welfare conditions in public and private shelters in Montenegro from the perspective of practicing local veterinarians.

A structured, validated questionnaire was distributed to licensed veterinarians (n=68) operating across central, northern, and coastal regions of Montenegro. The survey assessed estimated FRD population density, primary sources of free-roaming dogs, capacity and operational standards of shelters, implementation of Catch-Neuter-Vaccinate-Return (CNVR) programs, and prevalence of zoonotic diseases (e.g., rabies, leishmaniasis, echinococcosis). In addition, direct welfare audits were conducted in 8 municipal shelters using standardized animal welfare indicators (body condition score, skin lesions, behavioral stress, hygiene, veterinary care availability).

Key findings from the veterinary survey and shelter audits include:

Population Dynamics: 82% of surveyed veterinarians identified abandoned pet offspring and irresponsible ownership as the primary drivers of FRD growth. Coastal and central urban centers reported higher FRD densities during tourist seasons.

Shelter Welfare Standards: Direct audits revealed that 62.5% of municipal shelters experienced chronic overcrowding (exceeding capacity by 30–70%). Housing conditions varied widely; 50% lacked adequate thermal regulation, and 37.5% suffered from insufficient sanitation protocols, leading to recurrent infectious disease outbreaks (canine parvovirus, dermatophytosis).

Veterinary & Disease Control: CNVR coverage was estimated at less than 25% nationally, well below the WHO recommended 70% threshold required for effective population control. Seroprevalence concerns for Leishmania infantum were highlighted in coastal regions.

The findings emphasize an urgent need for a standardized national strategy for free-roaming dog management in Montenegro, prioritizing mandatory microchipping, public awareness campaigns on responsible ownership, systematic CNVR expansion, and legislative enforcement of humane shelter welfare guidelines.

Keywords: *Montenegro, free-roaming dogs, dog welfare, dog shelters*

[O04] — ORAL PRESENTATION

UNEXPECTED UTERINE LEIOMYOSARCOMA IN AN EXPERIMENTAL FEMALE WISTAR RAT: MULTIMODAL CHARACTERIZATION OF AN INCIDENTAL FINDING

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Spontaneous smooth muscle tumors of the uterus, particularly malignant leiomyosarcomas, are extremely rare incidental findings in young adult laboratory rats. Leiomyosarcomas originate from myometrial smooth muscle cells and exhibit aggressive local invasion and systemic metastatic potential. This study presents a comprehensive multimodal characterization (histopathological, immunohistochemical, biochemical, and endocrine) of an unexpected uterine leiomyosarcoma discovered incidentally during a surgical study in a 12-month-old female Wistar albino rat.

During routine laparotomy, a large, firm, multinodular mass measuring 3.2 × 2.1 cm was identified in the left uterine horn. The mass was surgically resected along with intact reproductive tract tissues. Blood samples were collected for serum Anti-Müllerian Hormone (AMH) measurement and dynamic thiol/disulfide homeostasis evaluation using automated spectrophotometric methods. Resected tumor tissue was processed for H&E histology and immunohistochemical (IHC) profiling (smooth muscle actin [SMA], desmin, Ki-67, and vimentin).

Multimodal findings confirmed:

Histopathology & IHC: Intersecting fascicles of pleomorphic spindle cells with abundant eosinophilic cytoplasm, marked nuclear atypia, focal necrosis, and high mitotic activity (>15 mitoses/10 HPF). Neoplastic cells showed strong cytoplasmic positivity for SMA and desmin, high Ki-67 proliferation index (>35%), confirming uterine leiomyosarcoma.

Biochemistry & Endocrine Profile: Thiol/disulfide balance demonstrated severe oxidative stress with decreased native thiol levels (182 µmol/L vs control 340 µmol/L) and elevated disulfide/native thiol ratio. Serum AMH levels were significantly reduced, reflecting impaired ovarian-follicular reserve associated with uterine pathology.

This report documents a rare spontaneous uterine leiomyosarcoma in a Wistar rat, detailing its histopathological, endocrine, and oxidative status profile, which serves as valuable reference data in laboratory animal pathology.

Keywords: *Anti Müllerian hormone, Leiomyosarcoma, uterus, thiol disulfide homeostasis, Wistar albino rat*

Support / Sponsor Note: *This study was supported by the Scientific Research Projects Coordination Unit of Aksaray University (Project No: 2025-053).*

[O05] — ORAL PRESENTATION

A CASE OF SQUAMOUS CELL CARCINOMA IN THE EAR LOOM OF A CAT

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Squamous cell carcinoma (SCC) is one of the most common malignant cutaneous neoplasms in cats, particularly affecting sparsely haired, unpigmented regions exposed to solar radiation, such as the pinna, eyelid, nasal planum, and lips. Cutaneous SCC is characterized by local invasiveness, tissue destruction, and a relatively low rate of distant metastasis in early stages.

This report describes a clinical and histopathological case of squamous cell carcinoma involving the ear pinna (ear loom) in a 9-year-old, white-coated, female domestic short-haired cat. The cat was presented to the Aksaray University Veterinary Faculty Surgery Clinic with an ulcerated, cauliflower-like, bleeding lesion on the apex of the left pinna that had been progressing over three months. Clinical examination revealed a firm, vegetative mass measuring approximately 2.5 × 2.0 cm with necrotic centers and crusted margins.

Surgical excision via partial pinnectomy was performed with a 1 cm clean surgical margin. Resected tissue was fixed in 10% neutral buffered formalin, embedded in paraffin, sectioned at 4 µm, and stained with Hematoxylin and Eosin (H&E). Histopathological examination revealed irregular cords and nests of neoplastic epidermal keratinocytes invading the dermis. Dysplastic features including cellular pleomorphism, prominent nucleoli, frequent mitotic figures, individual cell keratinization (dyskeratosis), and characteristic keratin pearls (horn pearls) were observed. Surrounding stroma showed marked desmoplasia and moderate lymphoplasmacytic infiltration.

Based on histopathological findings, a diagnosis of moderately differentiated cutaneous squamous cell carcinoma was confirmed. Post-operative recovery was uneventful, and no tumor recurrence or regional lymph node metastasis was noted during a 6-month follow-up period. Early surgical intervention with wide resection remains the primary treatment for feline pinnal SCC.

Keywords: *Squamous cell carcinoma, pathology, oncology*

[O06] — ORAL PRESENTATION— KEYNOTE SPEECH

NOVEL THERAPEUTIC PERSPECTIVES FOR HYPERTROPHIC CARDIOMYOPATHY MANAGEMENT

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Hypertrophic cardiomyopathy (HCM) is the most common heritable cardiomyopathy with a wide range of phenotypic expression. It is estimated to affect 1 out of 500 adults without a specific relation to geography, ethnicity, or sex. HCM is a typical disorder of a single gene inherited in an autosomal dominant manner. The pathophysiology of HCM is complex and involves varying degrees of septal thickening, mitral leaflet elongation, and subvalvular abnormalities. The different therapeutic strategies for HCM disease management include pharmacological treatments that target abnormal cellular processes, procedural-surgical approaches that target structural abnormalities in HCM, as well as allele-specific gene silencing and gene-editing which target the genetic foundations of HCM. According to the symptoms and the disease stage, relevant pharmacotherapies should be approached. Since 1960, beta-blockers have remained the first-line therapy, while calcium channel blockers serving as alternatives. Further pharmacotherapies: late sodium current blockers (ranolazine, eleclazine, novel GS-967) for treating HCM-related angina and the metabolic modulator perhexiline targeted refractory angina, while renin-angiotensin-aldosterone system inhibitors, antiarrhythmics, statins, N-acetylcysteine, and oral anticoagulants treated HCM symptoms. The emergence of cardiac myosin inhibitors has revolutionized the treatment of obstructive HCM by directly modulating myosin ATPase activity, through reducing excessive cross-bridge formation and increasing myosin in super-relaxed state in patients with left ventricular outflow tract obstruction. Mavacamten, has demonstrated a significant reduction in the need for invasive septal reduction therapy. Furthermore, aficamten has recently demonstrated clinical superiority over metoprolol in Phase 3 trials, showing greater improvements in peak oxygen consumption and functional capacity. Beyond pharmacotherapy, novel gene-based therapies TN-201, an adeno-associated virus serotype 9 (AAV9)-based gene replacement therapy delivering MYBPC3 to cardiomyocytes, is currently undergoing clinical evaluation. Finally, advanced, less invasive interventional techniques such as PIMSRA and SESAME offer breakthrough alternatives to directly target and ablate hypertrophic septal tissue. In conclusion, the continued integration of precision medicine strategies targeting molecular and structural mechanisms in HCM holds promise for more effective, individualized treatment and potential disease modification.

Keywords: *Hypertrophic cardiomyopathy (HCM); beta-blockers; Cardiac myosin inhibitors; Gene replacement therapy; Septal Reduction Therapy*

[O07] — ORAL PRESENTATION— KEYNOTE SPEECH

DECONSTRUCTING THE SUBSTRATE: COMPONENT-RESOLVED LIMITS TO THE ANAEROBIC VALORISATION OF LIGNOCELLULOSIC BIOMASS

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Anaerobic digestion is increasingly a sustainable solution that converts diverse feedstocks into valuable products, including biogas fuel and nutrient-bearing digestate. However, anaerobic digestion of lignocellulosic biomass is routinely reported as numbers that conceal a heterogeneous reality: what the microbial consortium encounters is not a defined chemical but three structurally distinct polymers with radically divergent bioavailability, physically interlocked. Progress in the field has been constrained less by reactor engineering than by our habit of treating the substrate as a black box.

This keynote resolves that box into its components and discuss that usually the resulting ceiling is more chemical than operational. Digested mesophilically at 37 °C, oil palm empty fruit bunch yielded 258 mL_CH_4 gVS^{-1}. In parallel, with acclimatised inoculum, standard cellulose, xylan and Kraft lignin returned methane yields of 360, 214 and approximately 2.6 mL_CH_4 gVS^{-1}; the corresponding degrees of methanation were 88.6 %, 56.7 % and approximately 0.4 %, a span of more than two orders of magnitude across the three fibre components. Cellulose methane yield reached quasi-equilibrium between inoculum-to-substrate ratios of 2 and 4, with cumulative biogas plateauing at 647 mL_biogas gVS^{-1}. Beyond a point, neither additional inoculum nor a richer medium recovers what substrate structure withholds.

The lecture then asks the forward question. If the lignin fraction is functionally inert to methanogenesis, the strategic response is not longer residence time but architectural: targeted pretreatment, cascaded valorisation of that fraction and honest theoretical benchmarking of what any given feedstock can yield. Recognising a ceiling is not pessimism; it is a precondition for designing around it. Under a One Health frame, this matters because over-promised digester performance strands infrastructure and returns residues to the disposal routes digestion was meant to replace.

Keywords: *Anaerobic digestion; Lignocellulosic biomass; Biochemical methane potential; Oil palm empty fruit bunch; Lignin recalcitrance;*

Support / Sponsor Note: *This study is supported by SRIR at CCCU*

[O08] — ORAL PRESENTATION

INVESTIGATION OF SOME ENTERIC VIRUSES IN DOGS

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In viral diseases of dogs, digestive tract infections are widely observed and cause serious health problems. Viral gastroenteritis can lead to fatal enteritis in puppies. Among the agents causing viral gastroenteritis in dogs, Canine adenovirus (CAdV), Canine parvovirus type 2 (CPV-2), Canine coronavirus (CCoV), and Canine distemper virus (CDV) are of great importance. Accurate diagnosis of viral pathogens is vital for disease control, vaccination, and treatment strategies.

In this study, rectal swab samples were collected from dogs of various age, sex, and breed showing symptoms of viral enteritis in Kırıkkale province and brought to the Kırıkkale University Faculty of Veterinary Medicine Animal Hospital. DNA and RNA extractions were performed using commercial isolation kits. Specific primers for CAdV, CPV-2, CCoV, and CDV were selected for conventional PCR and RT-PCR analyses.

Out of 85 sampled dogs, 53 (62.35%) were male and 32 (37.65%) were female. Viral nucleic acid was detected in 71 (83.52%) dogs, while 14 (16.47%) were negative. Monoinfections were found in 27 dogs (31.76%), and coinfections were detected in 44 dogs (51.76%). Specific positivity rates were: CPV-2 in 62 dogs (72.94%), CCoV in 40 dogs (47.05%), CDV in 15 dogs (17.64%), and CAdV in 3 dogs (3.52%). CPV-2 was the most prevalent agent, followed by CCoV, CDV, and CAdV. Among coinfections, CPV-2 + CCoV was the most common (n=30, 35.29%), followed by CPV-2 + CDV (n=5, 5.88%), CCoV + CDV (n=3, 3.52%), CPV-2 + CCoV + CDV (n=3, 3.52%), CPV-2 + CAdV (n=1, 1.17%), CCoV + CAdV (n=1, 1.17%), and CPV-2 + CCoV + CAdV (n=1, 1.17%).

Enteric viral infections were detected at high rates in dogs with diarrhea in Kırıkkale. The high frequency of CPV-2 and CCoV, along with frequent coinfections, highlights the complexity of canine viral enteritis. Continuous molecular surveillance and strict vaccination schedules are critical for preventing and controlling viral gastroenteritis in dogs.

Keywords: *Canine adenovirus, canine parvovirus type 2, canine coronavirus, canine distemper virus, Kırıkkale, epidemiology, PCR, RT-PCR*

Support / Sponsor Note: *This work was supported by Scientific Research Projects Coordination Unit of Kırıkkale University, Project number: 2024/125*

[O09] — ORAL PRESENTATION

INVESTIGATION OF EFFECTS OF COMBINED TRICHODOLL® AND CUTIBACTERIUM GRANULOSUM ADMINISTRATION ON TOTAL OXIDANT STATUS AND TOTAL ANTIOXIDANT STATUS IN SHEEP WITH DERMATOPHYTOSIS

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Dermatophytosis is a contagious zoonotic fungal disease affecting keratinized tissues in humans and animals, caused by dermatophytes of the species Trichophyton spp., Microsporum spp. and Epidermophyton spp. In this study, it was aimed to evaluate the effects of vaccination and immunomodulatory treatment protocols administered to sheep with dermatophytosis on serum total antioxidant status (TAS) and total oxidant status (TOS). The study material consisted of a total of 20 female Zom breed sheep, aged three years or over, with a history of dermatological lesions for at least one month and no prior treatment. Sheep diagnosed with dermatophytosis were randomly divided into two equal groups (n = 10). Blood samples were collected from all sheep at two different time (pre-administration and post-administration). Serum TAS and TOS levels were determined using a commercial ELISA kit. Only in the group that received the vaccine, a decrease in TAS levels was observed on day 7 (P = 0.059), while no significant change was detected in TOS levels (P = 0.910). In the combined treatment group, a significant increase in TAS levels was determined (P = 0.028), while no statistically significant difference was observed in TOS levels. (P = 0.705). The results obtained reveal that Cutibacterium granulosum regulates the oxidative stress response and increases antioxidant capacity due to its immunomodulatory properties.

Keywords: *Dermatophytosis, immudollCG, oxidative stress, sheep.*

[O10] — ORAL PRESENTATION

PROSPECTIVE EVALUATION OF OXIDATIVE STRESS AND HEMATOLOGIC INDICES IN DOGS WITH SYSTEMIC INFLAMMATORY RESPONSE SYNDROME

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Systemic inflammatory response syndrome (SIRS) is a complex clinical condition associated with systemic inflammation and oxidative stress. This study aimed to assess oxidative stress status and hematological changes in dogs diagnosed with SIRS and to investigate potential relationships between oxidative stress markers and hematological parameters. Dogs diagnosed with SIRS (n = 31; mean age 3.3 years, range 2 months-12 years) and healthy control dogs (n = 9; mean age 4.2 years, range 4 months-10 years) were included in the study. Serum total antioxidant status (TAS) and total oxidant status (TOS) were measured, and complete blood count parameters were evaluated. Serum TAS levels were significantly lower in dogs with SIRS compared to healthy dogs (mean rank: 18.16 vs. 28.56; p = 0.019), whereas serum TOS levels were significantly higher in dogs with SIRS (mean rank: 22.77 vs. 12.67; p = 0.022). Hematological alterations in dogs with SIRS were variable; leukopenia was detected in 35.5% of cases, lymphopenia in 25.8%, and thrombocytosis in 25.8%. Comparison between groups revealed significant differences only in monocyte percentage, which was higher in dogs with SIRS (p = 0.039), and mean corpuscular hemoglobin concentration, which was lower in dogs with SIRS (p = 0.031). Correlation analyses demonstrated weak, non-significant positive associations between TAS and red blood cell count (r = 0.217), hemoglobin concentration (r = 0.304), and hematocrit (r = 0.287), as well as a weak, non-significant negative correlation between TOS and granulocyte count (r = −0.076). These findings suggest that oxidative stress and hematological alterations may occur concurrently in canine SIRS, but are not necessarily directly or linearly related. Repeated and longitudinal evaluation of oxidative stress markers together with hematological parameters may provide further insight into their relationship in dogs with SIRS.

Keywords: *Canine, systemic inflammatory response syndrome, total antioxidant status, total oxidant status*

[O11] — ORAL PRESENTATION

EVALUATION OF SERUM TUMOR NECROSIS FACTOR-A, INTERLEUKIN-1B, AND INTERLEUKIN-6 LEVELS IN SHEEP WITH DERMATOPHYTOSIS

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Dermatophytosis, primarily caused by Trichophyton verrucosum in small ruminants, is a contagious cutaneous fungal infection characterized by epidermal scaling, alopecia, and crust formation. Skin lesions trigger localized and systemic immune responses, releasing pro-inflammatory cytokines that modulate cutaneous inflammation and host defense mechanisms. Tumor necrosis factor-alpha (TNF-α), interleukin-1 beta (IL-1β), and interleukin-6 (IL-6) are key pro-inflammatory cytokines involved in the systemic inflammatory response to fungal pathogens. This study aimed to determine serum concentrations of TNF-α, IL-1β, and IL-6 in sheep with dermatophytosis and compare them with healthy controls.

The study included 30 sheep naturally infected with Trichophyton verrucosum (diagnosed clinically and verified by microscopic examination of skin scrapings) and 15 healthy control sheep. Venous blood samples were collected, and serum concentrations of TNF-α, IL-1β, and IL-6 were measured using ovine-specific enzyme-linked immunosorbent assay (ELISA) kits.

Serum TNF-α, IL-1β, and IL-6 levels were significantly higher in sheep with dermatophytosis compared to healthy controls ($p < 0.001$ for all parameters). Mean TNF-α levels were 245.8 ± 32.4 pg/mL in the infected group vs. 82.3 ± 12.1 pg/mL in controls; IL-1β levels were 112.5 ± 18.2 pg/mL vs. 34.6 ± 6.4 pg/mL; and IL-6 levels were 188.4 ± 25.6 pg/mL vs. 51.2 ± 8.9 pg/mL.

In conclusion, ovine dermatophytosis induces a marked systemic pro-inflammatory cytokine response. Elevated TNF-α, IL-1β, and IL-6 levels highlight the involvement of systemic inflammatory pathways in cutaneous ringworm infections in sheep, offering potential biomarkers for monitoring disease severity and therapeutic response.

Keywords: *Dermatophytosis, sheep, Trichophyton verrucosum, TNF-α, IL-1β, IL-6*

[O12] — ORAL PRESENTATION

EVALUATION OF HOMOCYSTEINE AND NEUTROPHIL-TO-LYMPHOCYTE RATIO AS BIOMARKERS IN BOVINE RESPIRATORY DISEASE

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Bovine Respiratory Disease (BRD) is the most significant health and economic challenge in cattle farming worldwide, leading to high morbidity, mortality, reduced weight gain, and extensive veterinary costs. Early and accurate diagnosis of BRD is vital for timely therapeutic intervention and preventing irreversible pulmonary damage. Homocysteine (Hcy)—a sulfur-containing amino acid involved in vascular inflammation and oxidative stress—and Neutrophil-to-Lymphocyte Ratio (NLR)—a systemic inflammatory marker derived from complete blood count—have gained interest as diagnostic biomarkers in human and veterinary medicine.

This study aimed to evaluate serum homocysteine levels and NLR in cattle affected by BRD and assess their potential as diagnostic and prognostic biomarkers. A total of 50 calves (30 with acute BRD diagnosed via clinical examination, thoracic auscultation, and ultrasound, and 20 age-matched healthy controls) were included. Venous blood samples were collected before medical treatment. Serum homocysteine was measured by automated immunoassay, and NLR was calculated from automated CBC differential counts.

Calves with BRD exhibited significantly elevated serum homocysteine levels (18.4 ± 3.2 µmol/L) compared to healthy controls (8.1 ± 1.5 µmol/L, $p < 0.001$). Similarly, NLR values were markedly increased in the BRD group (4.85 ± 0.92) compared to healthy controls (1.12 ± 0.25, $p < 0.001$). ROC curve analysis demonstrated high diagnostic sensitivity (91.3%) and specificity (88.5%) for NLR at a cutoff value of 2.8. A positive correlation was observed between homocysteine levels and clinical illness scores ($r = 0.68$, $p < 0.001$).

Homocysteine and NLR are elevated in bovine respiratory disease, reflecting systemic oxidative stress and acute inflammatory response. These accessible parameters represent promising complementary biomarkers for early detection and severity assessment of BRD in cattle.

Keywords: *Biomarker, inflammation, NLR, oxidative stress, pneumonia*

[O13] — ORAL PRESENTATION

COMPARISON OF THREE DIFFERENT TREATMENT METHODS FOR SUBCLINICAL MASTITIS IN ASSAF EWES

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Subclinical mastitis is a prevalent problem in dairy sheep operations, causing diminished milk yield, altered milk composition, early culling, and potential progression to clinical mastitis. Antimicrobial resistance concerns necessitate evaluating alternative or adjunctive therapeutic strategies alongside conventional intramammary antibiotics. This study evaluated and compared the therapeutic efficacy of three different treatment regimens in lactating Assaf ewes diagnosed with subclinical mastitis.

A total of 60 lactating Assaf ewes identified with subclinical mastitis based on California Mastitis Test (CMT positive), somatic cell count (SCC > 500,000 cells/mL), and microbiological culture were randomly assigned to three equal treatment groups (n=20/group):

Group 1 (Conventional Antibiotic): Intramammary amoxicillin + clavulanic acid for 3 consecutive days.

Group 2 (Dimethyl Sulfoxide - DMSO): Intramammary 10% medical-grade DMSO infusion combined with parenteral anti-inflammatory therapy.

Group 3 (Hypochlorous Acid Gel - HOCl): Intramammary and topical intramammary hypochlorous acid gel application for 5 days.

Therapeutic efficacy was evaluated on Days 7, 14, and 21 post-treatment by monitoring bacteriological cure rates, CMT score reductions, and SCC parameters.

Bacteriological cure rates on Day 21 were highest in Group 1 (85.0%), followed closely by Group 3 (75.0%) and Group 2 (60.0%). Somatic cell count decreased significantly across all groups ($p < 0.01$), with Group 1 and Group 3 showing superior reduction compared to Group 2. Hypochlorous acid gel demonstrated promising antimicrobial and anti-inflammatory activity without tissue irritation.

While conventional intramammary antibiotics remain the most effective primary treatment, hypochlorous acid gel presents a viable alternative/adjunctive non-antibiotic therapy for managing subclinical mastitis in Assaf ewes, aiding in antibiotic stewardship.

Keywords: *Assaf ewe, subclinical mastitis, DMSO, hypochlorous gel*

Support / Sponsor Note: *This study was supported by Project No. 23.VF.01, entitled "Comparison of Three Different Treatment Methods for Subclinical Mastitis in Assaf Ewes".*

[O14] — ORAL PRESENTATION

COMPARATIVE FUNCTIONAL HISTOLOGY OF THE DIGESTIVE SYSTEM IN FALCO CHERRUG AND RELATED FALCONIFORMES SPECIES

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Avian digestive system exhibits remarkable structural and functional adaptations that reflect dietary specialization, metabolic rate, and evolutionary lineage. Among raptors, the Saker Falcon (Falco cherrug), an endangered apex predator of open landscapes, possesses specialized gastrointestinal adaptations designed for rapid digestion and assimilation of high-protein, bone-inclusive prey. Despite its ecological and conservation significance, comprehensive histological and histochemical characterization of the digestive tract in F. cherrug—and its comparative evaluation against closely related Falconiformes species—remains limited. This study was undertaken to delineate the microstructural, histochemical, and functional organization of the alimentary canal (esophagus, proventriculus, ventriculus, small intestine, and large intestine) in Falco cherrug, compared with Falco tinnunculus (Eurasian Kestrel) and Accipiter nisus (Eurasian Sparrowhawk).

Tissue samples from adult specimens necropsied following natural trauma were subjected to standard histological processing. Sections (5 µm) were stained with Hematoxylin & Eosin for structural architecture, Periodic Acid-Schiff (PAS) and Alcian Blue (AB, pH 2.5 and pH 1.0) for mucosubstance characterization, and Masson's Trichrome for connective tissue distribution. Immunohistochemical profiling was performed to identify enteroendocrine cell populations (serotonin, somatostatin, and gastrin) and Paneth-like cells across intestinal segments.

Morphometric and histochemical analysis revealed significant species-specific differences reflecting hunting strategy and prey selection:

Proventriculus & Ventriculus: F. cherrug displayed exceptionally deep compound tubular oxynticopeptic glands in the proventriculus with high carbonic anhydrase activity, supporting intensive acid production. The gizzard cuticle (koilin layer) in F. cherrug was significantly thicker and more heavily folded than in F. tinnunculus, providing superior mechanical protection against bone fragments.

Intestinal Mucosa & Mucosubstances: The villus height-to-crypt depth ratio in the duodenum of F. cherrug was markedly higher than in A. nisus. Acidic mucins (AB pH 2.5 positive) predominated in the goblet cells of the posterior intestine in all species, with F. cherrug showing a unique distribution of sulfomucins (AB pH 1.0 positive) in the caecal crypts.

Enteroendocrine & Immune Features: Serotonin-immunoreactive cells were abundant in the pyloric region and duodenum of F. cherrug, while gastrin-positive cells were concentrated in the proventricular-gizzard junction. Distinct lysozyme-positive Paneth-like cells were identified in the intestinal crypts of F. cherrug, suggesting a robust mucosal innate immune defense.

These findings provide detailed comparative insights into the functional histology of the digestive system in Falco cherrug, underscoring physiological adaptations to a carnivorous diet and offering baseline reference data for avian gastroenterology, clinical diagnosis, and raptor conservation medicine.

Keywords: *Falco cherrug, Falconiformes, digestive system histology, proventriculus, ventriculus, enteroendocrine cells, Paneth cell*

[O15] — ORAL PRESENTATION

INVESTIGATION OF GROWTH DIFFERENTIATION FACTOR-15 (GDF-15) LEVELS IN CATS WITH HYPERTROPHIC CARDIOMYOPATHY

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Hypertrophic cardiomyopathy (HCM), the most common cardiomyopathy in cats, is characterized by myocardial hypertrophy, diastolic dysfunction, and, in advanced stages, congestive heart failure. It is closely associated with processes such as inflammation, oxidative stress, and cellular injury. In this context, growth differentiation factor-15 (GDF-15), which increases in response to cellular stress and tissue damage, has emerged as a prognostic and diagnostic biomarker in various clinical conditions, including cardiovascular diseases, metabolic disorders, cancer, and infectious diseases. The aim of this study was to determine serum GDF-15 levels in cats diagnosed with HCM, to compare these levels with those of healthy cats, and to evaluate the relationship between GDF-15 and disease severity in order to assess its potential as a biomarker. The study included cats diagnosed with HCM (n = 60) and clinically healthy cats (n = 20). The HCM group was further subdivided according to ACVIM criteria into stage B1 (n = 20), stage B2 (n = 20), and stage C (n = 20). Serum N-terminal pro-B-type natriuretic peptide (NT-proBNP) and cardiac troponin-I (cTnI) levels were measured using a fluorescence immunoassay method, while GDF-15 levels were measured using ELISA. GDF-15 levels in the HCM Stage B1 group [169.82 (120.01–356.37) ng/L] were found to be significantly lower compared to the healthy group [481.44 (274.76–623.47) ng/L] (P = 0.005). In contrast, no statistically significant differences were observed among Stage B2 [343.65 (228.12–452.82) ng/L], Stage C [345.77 (244.02–464.48) ng/L], and the healthy control group [481.44 (274.76–623.47) ng/L]. In conclusion, NT-proBNP and cTnI appear to be strong biomarkers reflecting the progression of HCM, whereas GDF-15 may serve as a potential diagnostic and risk stratification biomarker, particularly in detecting early and subclinical changes and distinguishing affected cats from healthy individuals. These findings may contribute to the early diagnosis, monitoring, and clinical management of cats with HCM. However, further large-scale, long-term, and prospective studies are required to clarify the clinical role of GDF-15.

Keywords: *Echocardiography, Hypertrophic cardiomyopathy, Cat, GDF-15, Cardiac biomarkers*

Support / Sponsor Note: *This study was funded by the Scientific Research Project Unit at Erciyes University under project number TYL-2024-14221.*

[O16] — ORAL PRESENTATION

FERTILITY MANAGEMENT IN DAIRY COW

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Optimal reproductive performance is a critical determinant of profitability in dairy farming operations. In recent decades, genetic selection for high milk yield has been accompanied by a decline in dairy cow fertility, leading to prolonged calving-to-conception intervals, increased insemination indices, and elevated involuntary culling rates. Effective fertility management strategies are therefore essential for maintaining herd economic viability.

This study evaluates key reproductive parameters and fertility management practices across selected commercial dairy farms in Batna province, Algeria. Reproductive records from 150 lactating Holstein-Friesian cows were analyzed over a 12-month period. Key parameters measured included voluntary waiting period (VWP), first service conception rate (FSCR), overall conception rate, days open (calving-to-conception interval), and number of services per conception (SPC).

The results demonstrated a mean calving-to-conception interval of 138 ± 24 days, exceeding the target benchmark of 100–110 days. The overall first service conception rate was 38.5%, while the mean number of services per conception was 2.3. Estrus detection efficiency was identified as a major limiting factor, with detection rates averaging 46%. Postpartum uterine health status significantly influenced fertility; cows affected by clinical endometritis showed extended days open (162 vs. 121 days, $p < 0.01$).

In conclusion, improving dairy cow fertility requires an integrated approach focusing on accurate estrus detection, systematic postpartum health monitoring, balanced transition period nutrition, and structured hormonal synchronization protocols where appropriate.

Keywords: *Fertility, calving-to-conception interval, reproduction, performance, dairy cow*

[O18] — ORAL PRESENTATION

ADVANCES IN ANIMAL HOUSING DESIGN AND THEIR PHYSIOLOGICAL IMPACT ON LIVESTOCK HEALTH AND PRODUCTIVITY

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University of Mohamed Cherif Messaadia

The field of animal housing design has undergone significant transformation in the last five years, shifting from designs primarily focused on shelter provision to designs that emphasize animal welfare.

This review aims to provide a critical analysis of the latest research related to advancements in the engineering design of housing and its physiological impact on the animal health status and productivity.

This study is based on an analysis of multiple international peer-reviewed studies conducted between 2021 and 2025 focusing on:

Ventilation and temperature regulation - Animal density and space allocation - Flooring design and structural layout

The results of each study and research on animal housing design during this period (2020–2025) demonstrate that improved ventilation reduces the incidence of respiratory diseases by approximately 20-35% and decreases ammonia concentration by nearly 30-50%. It also reduces heat stress by nearly 25-40%, which can increase milk production by about 5-15%in dairy cattle. This in turn improves hormonal stability and improves feed conversion ratio.

Regulating animal density, improving floor design and optimizing animal movement patterns reduce disease incidence and metabolic energy expenditure, thus redirecting energy toward productive performance. Smart monitoring systems enable early detection of health disorders and analyze animal behavior in addition to environmental sensing technologies.

Economically, despite the significant costs of implementing advanced housing systems, the data indicate a reduction in losses and a substantial increase in production efficiency in the long term. Specifically, improved housing and environmental control can increase production efficiency by approximately10-18%, while reducing health-related losses by nearly15-25%.

This review highlights the critical role of advanced animal housing and its contribution to the livestock production systems as it reduces losses and increases production.

Keywords: *Animal housing design, animal welfare, environmental control*

[O19] — ORAL PRESENTATION

ASPERGILLUS FUMIGATUS METABOLITES AND CONIDIAL SUSPENSIONS: NOVEL BIOCONTROL AGENTS FOR MAJOR MALARIA VECTOR ANOPHELES MOSQUITO LARVAE FROM SUB-SAHARAN AFRICA

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Fungal secondary metabolites are chemically diverse and include lipid-derived molecules with known biological activities. This study combined entomological, molecular, and biochemical methods to investigate metabolites produced by Aspergillus fumigatus isolated from mosquito-associated environments and to assess their potential relevance for vector control and antimicrobial discovery. Conidial suspensions and culture extracts were profiled by Gas Chromatography-Mass Spectrometry (GC–MS) and annotated against spectral libraries. Concurrently, larval bioassays and molecular species identification were performed to document local vector species composition and to relate chemical findings to the entomological context. GC–MS revealed a complex mixture of metabolites dominated by long-chain fatty-acid derivatives (notably linoleic, oleic, palmitic, and lauric acid derivatives), alongside sulphur-containing compounds and fatty-acid amides (including dodecanamide). These compound classes are reported to have antimicrobial, anti-inflammatory, and larvicidal/cytotoxic activities, consistent with the role of fungal metabolites in ecological competition and as reservoirs of bioactive leads. Anopheles coluzzii was identified as the predominant species in sampled sites. The chemical profile of A. fumigatus isolates contains several metabolite classes with potential applications in eco-friendly vector management and antimicrobial development. Further fractionation, activity-guided isolation, and mode-of-action studies are recommended to prioritise lead compounds for product development.

Keywords: *Anopheles coluzzii, Aspergillus fumigatus, Fungal metabolites, Vector control, GC-MS*

Support / Sponsor Note: *The study was supported by the Tertiary Education Trust Funds (TETFUND BUK/DRIP/TETF/027).*

[O20] — ORAL PRESENTATION

INHIBITORY ACTIVITY OF TOTAL GLUTATHIONE S TRANSFERASE ACTIVITY IN ALBINO RATS BY ETHANOLIC EXTRACTS OF ADANSONIA DIGITATA

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Glutathione s transferases (GST) are a family of Phase II detoxification enzymes that catalyze the conjugation of glutathione (GSH) to a wide variety of xenobiotics. This detoxification ability plays a role in cellular protection from environmental and oxidative stress, yet is also implicated in cellular resistance to drugs especially during cancer treatment. Exploring specific GST inhibitors particularly the Pi class (π) GST is seen as an important step for resolving drug resistance due to GST overexpression particularly during cancer treatment. This study was aimed at identifying GST inhibitors from Nigerian medicinal plant; Adansonia digitata. Various organic solvents were used to isolate the active components of the plant's extract and Rat's liver was used as a source of total GST enzymes. The activity of the enzyme was determined using CDNB as a substrate. It was discovered that ethanolic extract of Adansonia digitata has the highest inhibitory activity with IC50 of 1.07 × 10-5 µg/mL. Furthermore, GC-MS analysis was carried out on the most active fraction and various compounds were identified. In-silico analysis based on the molecular docking result showed that 8-Methoxy-4-phenylquinoline-2-hydrazine is the likely candidate, having showcased lower minimum binding energy compared with the standard substrate; ethacrynic acid. This data may suggest the use of aqueous extract of Adansonia digitata in the inhibition of GST and can serve as a step toward discovery of GST inhibitor for effective cancer treatment.

Keywords: *Cancer, Inhibitors, GST, Adansonia digitata*

Support / Sponsor Note: *This research was supported by TETFUND non-degree-oriented research grant, Bayero University, Kano, nigeria.*

[O21] — ORAL PRESENTATION

INSECTICIDE RESISTANCE, VECTOR DYNAMICS AND DENGUE TRANSMISSION IN NIGERIA: A SYSTEMATIC REVIEW AND META ANALYSIS

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Dengue transmission in Nigeria is shaped by evolving vector dynamics and widespread insecticide resistance. Despite signs of endemicity, surveillance remains fragmented, and resistance mechanisms in Aedes mosquitoes are poorly integrated into control efforts. This review aimed to assess dengue prevalence, insecticide resistance patterns, and seasonal vector trends, highlighting environmental and genetic drivers. A systematic review and meta-analysis were conducted following PRISMA guidelines. Literature from 2000–2025 was reviewed across six databases. Data on dengue prevalence (IgG, IgM, NS1, PCR), resistance mechanisms (GST, CYP450, kdr mutations), and mosquito density were extracted. Fixed and random-effects models estimated pooled rates. Heterogeneity (I^2) and publication bias (funnel plots) were assessed. Pooled dengue prevalence was 3.82% (95% CI: 2.40–5.24%), with low heterogeneity (I^2 = 0.45%). Prevalence ranged from 0.67% to 77.1%, influenced by diagnostic method and outbreak timing. IgG assays showed higher rates; NS1 and PCR were lower. Temperature correlated moderately with prevalence (r = 0.411); humidity was a significant predictor (p = 0.0204). Insecticide resistance was 55% (95% CI: 35–75%), with high heterogeneity (I^2 = 96.1%). Dominant mechanisms included GST detoxification (31.25%), F1534C (25%), and S989P (12.5%) mutations. Lagos, Kano, and Osogbo were resistance hotspots. Pyrethroid survival averaged 52% (95% CI: 35–69%). Mosquito activity peaked during the rainy season (86.7% of studies), but 13.3% reported dry-season persistence in urban areas due to poor drainage and heat. Dengue is underreported yet persistent in Nigeria, with diagnostic and spatial variability. Insecticide resistance driven by metabolic and genetic factors compromises control tools. Urban Aedes adaptation enables year-round transmission. Integrated resistance management, molecular surveillance, and climate-informed strategies are essential.

Keywords: *Dengue, Vector Biology, Insecticide Resistance, Nigeria, Systematic Review.*

Support / Sponsor Note: *Tetfund*

[O22] — ORAL PRESENTATION

INFLUENCE OF PHYSICOCHEMICAL PARAMETERS ON ANOPHELES GAMBIAE LARVAL DENSITY IN RURAL AND PERI-URBAN SETTINGS OF KANO STATE, NIGERIA

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Understanding the physical, biological and chemical characteristics of insect breeding habitats is essential requirement for successful vector control program. This study aimed to assess the influence of physicochemical parameters on Anopheles mosquito larval density in diverse breeding sites at Bunkure and Kumbotso LGAs of Kano State, Nigeria. Anopheles gambiaesensulato larval density for each breeding site were determined. The sites were geo-referenced, characterized and their physicochemical compositions such as pH, temp, total dissolve solutes (TDS), DO, BOD, total hardness,(TH), Carbonate(C032-), Nitrite (NO2-), Electrical Conductivity (EC), Salinity, Turbidity, Total Suspended Solute (TSS), Alkalinity, Calcium (Ca2+), Magnesium (Mg2+), Potassium (K+), Nitrate (NO3-), Sodium (Na+), Sulphate (SO42-), Phosphate (PO43-), Chlorine (Cl-), Zinc(Zn2+), Lead (Pb2+), Nickel (Ni+2), Iron (Fe2+), Chromium (Cr2+),Cadmium (Cd2+) and Manganses (Mn2-) were determined according to standard protocols. The study revealed a significant variation in physicochemical parameters such pH, temp, total dissolve solutes, DO, BOD, total hardness, Carbonate and Nitrite content across the study areas ($P<0.05$). The Dunn's Post-hoc pairwise comparison tests revealed a significant variation between the breeding sites in all parameters except in carbonate content (C032-). Correlation analysis revealed a weak positive association between larval density and some physicochemical parameters such as Lead (Pb2+) ($r = 1.0000$, $P= 0.0000$), Chlorine (Cl-) ($r = 0.3396$, $P = 0.0431$) and Cadmium (Cd2+) ($r = 1.0000$, $P = 0.0000$). A weak negative and significant correlation was found between larval density, total Hardness and nitrite content. The findings of this study established the correlation of Anophels mosquito larval density with lead, chromium and chlorine content. Monitoring and alteration of these parameters could inform decisions on mosquito control methods directed against the aquatic stages of the vector.

Keywords: *Physicochemical, Anopheles mosquito, Larval density, Rural and Periurban settings.*

[O23] — ORAL PRESENTATION

GREEN BIOTECHNOLOGY APPROACHES FOR CONTROLLING FISH-BORNE ZOONOTIC DISEASES AND ANTIMICROBIAL RESISTANCE: A ONE HEALTH PERSPECTIVE

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Sam Higginbottom University Of Agriculture Technology And Sciences
World Council Of Professionals And Industries

Aquaculture has contributed significantly to the global food security, economic growth and nutritional requirement of growing population; however, its rapid expansion has intensified the fish borne zoonotic diseases and antimicrobial resistance (AMR), causing concern to sustainable aquaculture and public health. The widespread use of antibiotics combines with key environmental stresses like rising temperatures, chemical pollution and climate disruptions, develops the antimicrobial-resistant pathogens in aquatic ecosystems.

Pathogens and antibiotic resistance genes spread across the human-fish interaction, through interconnected aquatic source and fish products, driven by wastewater contamination, intensive aquaculture, and horizontal gene transfer. Advance biotechnological approaches and sustainable disease management strategies can address these challenges through one health approach.

The paper evaluates the recent advances in green biotechnology for prevention, surveillance, control and management of fish-borne zoonotic diseases and AMR in aquaculture. Green biotechnology uses eco-friendly advance biological tools, including genomic surveillance, environmental DNA (eDNA) monitoring, CRISPR-based molecular diagnostics, probiotics, phage therapy, fish vaccines, microbiome engineering, and biofloc technology to manage fish-borne zoonotic diseases and antimicrobial resistance (AMR) in aquaculture. Their potential roles in early pathogen detection, rapid disease diagnosis, reduction of antibiotic use, and improvement of aquatic ecosystem health are evaluated based on recent scientific evidence.

Research gaps, including the limited integration of molecular surveillance with routine aquaculture health management, inadequate monitoring of antimicrobial resistance genes in aquatic environments, and the need for standardized genomic surveillance frameworks for fish-borne zoonotic pathogens.

The paper proposes a multidisciplinary framework that integrates biotechnology, environmental monitoring, epidemiological surveillance, and precision aquaculture for disease management. These innovative green biotechnology approaches can reduce the risk of zoonotic disease transmission, minimize environmental contamination, and support sustainable aquaculture production. Integration of green biotechnology within the One Health framework provides a practical pathway to protect ecosystem health, combats antimicrobial resistance and improves food safety.

Keywords: *One Health, Fish-borne Zoonoses, Antimicrobial Resistance, Aquaculture Biotechnology, Precision Aquaculture*

Support / Sponsor Note: *This study is supported by collaborative Research Program of World Council*

[O24] — ORAL PRESENTATION

A PROPOSED COMBINED CHITOSAN–MESENCHYMAL STEM CELL STRATEGY FOR HELICOBACTER PYLORI MANAGEMENT: MOLECULAR DOCKING EVALUATION OF MAJOR VIRULENCE FACTORS

MAI MAGDY ELSAYED

New Ismailia National university

Background: Helicobacter pylori infection is a leading cause of chronic gastritis, peptic ulcer disease, and gastric cancer. Increasing antibiotic resistance and persistent gastric mucosal injury necessitate the development of novel therapeutic strategies capable of controlling bacterial virulence while promoting gastric tissue regeneration.

Aim: This study aimed to propose a combined therapeutic strategy integrating chitosan as a potential anti-(Helicobacter pylori) agent with mesenchymal stem cells (MSCs) for gastric mucosal regeneration. Molecular docking analysis was performed to evaluate the interaction between chitosan and major (H. pylori) virulence-associated proteins in support of the proposed therapeutic concept.

Materials and Methods: A comprehensive literature review was conducted to investigate the antibacterial properties of chitosan and the regenerative potential of mesenchymal stem cells. Molecular docking analysis was carried out using the SwissDock server against three major (H. pylori) virulence proteins: BabA (PDB ID: 4GD3), Urease (PDB ID: 4H10), and CagA (PDB ID: 4DVY). Binding poses and predicted binding affinities were analyzed to evaluate the anti-virulence potential of chitosan.

Results: Molecular docking demonstrated favorable interactions between chitosan and all investigated virulence proteins. The predicted binding affinities were (−6.3125 kcal/mol) for CagA, −5.5615 kcal/mol for BabA, and −5.3901 kcal/mol for Urease, suggesting that chitosan may interfere with bacterial adhesion, survival, and pathogenicity. These computational findings support the potential use of chitosan as an anti-virulence agent. Based on previous experimental evidence, mesenchymal stem cells may complement this antibacterial effect by promoting gastric mucosal regeneration and tissue repair.

Conclusion: This study proposes an integrated therapeutic strategy combining the anti-virulence potential of chitosan with the regenerative capacity of mesenchymal stem cells for the management of (Helicobacter pylori)-associated gastric diseases. The molecular docking findings provide computational support for this proposed strategy. Further molecular dynamics simulations and experimental validation are required to confirm these findings and facilitate future therapeutic development.

Keywords: *Keywords (Helicobacter pylori); Chitosan; Mesenchymal Stem Cells; Molecular Docking; BabA; Urease; CagA; Gastric Regeneration.*

[O25] — ORAL PRESENTATION

IN SILICO CHARACTERIZATION OF GLYCYRRHIZIN ADMET PROPERTIES: PHARMACOKINETIC BEHAVIOR, METABOLIC PROFILE, AND TOXICITY ASSESSMENT

LEYLA GALANDARLI, GULNARA AKVERDIEVA

Baku State University

Glycyrrhizin (GL), a major biologically active triterpenoid saponin derived from the roots of Glycyrrhiza glabra (licorice), has received substantial scientific interest due to its diverse pharmacological activities, including anti-inflammatory, antiviral, antioxidant, hepatoprotective, immunoregulatory, and anticancer properties. However, despite its broad therapeutic potential, the successful translation of glycyrrhizin into a pharmaceutical candidate requires a detailed evaluation of its pharmacokinetic characteristics, bioavailability limitations, and overall safety profile. In modern drug discovery, computational absorption, distribution, metabolism, excretion, and toxicity (ADMET) analysis has become an indispensable approach for the early characterization of bioactive compounds, enabling rapid prediction of drug-like properties, pharmacokinetic behavior, and potential toxicity risks while minimizing experimental costs and time requirements. The aim of this study was to conduct a comprehensive in silico investigation of the ADMET profile of glycyrrhizin to assess its pharmacokinetic properties, metabolic characteristics, toxicological potential, and suitability for further pharmaceutical development. The molecular and physicochemical characteristics of glycyrrhizin were retrieved from the PubChem database and subjected to evaluation using established computational ADMET prediction platforms. Drug-likeness was analyzed according to Lipinski's Rule of Five criteria and additional medicinal chemistry parameters. The predicted pharmacokinetic assessment included gastrointestinal absorption, blood-brain barrier (BBB) permeability, aqueous solubility, skin permeability, bioavailability estimation, P-glycoprotein transporter activity, and potential interactions with major cytochrome P450 (CYP450) enzymes. Toxicological evaluation involved the prediction of mutagenic potential, carcinogenicity, hepatotoxicity, cardiotoxicity, skin sensitization, acute toxicity, and other safety-related endpoints. The obtained ADMET results for glycyrrhizin are summarized in Figures 1–2 and Tables 1–5. Computational analysis revealed that glycyrrhizin exhibits several advantageous pharmaceutical characteristics, although certain pharmacokinetic limitations are associated with its complex molecular architecture. The compound demonstrated low predicted gastrointestinal absorption, which corresponds with its high molecular mass, increased topological polar surface area, and extensive hydrogen-bonding capacity. Although glycyrrhizin showed acceptable aqueous solubility, its high polarity and structural complexity may restrict passive membrane permeability and reduce intestinal transport efficiency. The compound displayed minimal BBB permeability, indicating a very low probability of significant central nervous system exposure. Furthermore, glycyrrhizin demonstrated weak inhibitory activity toward major CYP450 isoenzymes, suggesting a reduced likelihood of clinically relevant metabolic drug–drug interactions. The predicted metabolic and excretion characteristics indicated a stable pharmacokinetic profile with prolonged systemic persistence. Toxicity predictions demonstrated a favorable safety pattern, with low probabilities of mutagenicity, carcinogenicity, hepatotoxicity, cardiotoxicity, and skin sensitization. These computational findings are consistent with previously reported pharmacological and toxicological observations supporting the relatively safe profile of glycyrrhizin. Although glycyrrhizin does not fully satisfy several classical oral drug-likeness parameters due to its high molecular size and extensive polarity, such characteristics are typical for naturally occurring triterpenoid saponins and do not necessarily prevent therapeutic application. In particular, modern formulation strategies and advanced drug-delivery technologies may provide effective approaches to overcome limitations associated with absorption and bioavailability. Overall, the integrated in silico ADMET assessment indicates that glycyrrhizin possesses a promising pharmacological profile characterized by low toxicity risk, limited CNS penetration, minimal interaction with drug-metabolizing enzymes, and acceptable predicted pharmacokinetic behavior. These findings support further experimental validation and preclinical investigation of glycyrrhizin as a potential natural therapeutic agent. Moreover, this study emphasizes the importance of computational ADMET approaches as valuable tools for accelerating the characterization, optimization, and development of plant-derived bioactive compounds, providing a foundation for future pharmacokinetic studies and formulation improvement.

Keywords: *Glycyrrhizin; ADMET prediction; in silico analysis; pharmacokinetics; drug-likeness; toxicity.*

[P01] — POSTER PRESENTATION

EVALUATION OF THE EFFECT OF ACOUSTIC ENRICHMENT ON BEHAVIORAL AND PHYSIOLOGICAL STRESS INDICATORS IN STRAY CATS TEMPORARILY HOUSED IN SINGLE CAGES WITH THE CAT STRESS SCORE (CSS) AND INFRARED THERMOGRAPHY

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Stray cats temporarily housed in single cages under shelter conditions may develop behavioral and physiological stress responses due to environmental stressors. Although acoustic enrichment has the potential to reduce stress, studies concurrently evaluating behavioral and thermal physiological stress responses in cats remain limited. This study aimed to evaluate behavioral and thermal physiological changes following acoustic enrichment in stray cats housed in single cages using the Cat Stress Score (CSS) and maximum surface temperature (Tmax) of the ocular thermal window (lacrimal caruncle) measured by infrared thermography.

The study included 27 stray cats housed at a municipally owned animal hospital in a room maintained at 24 °C. As acoustic enrichment, Gabriel Fauré's Élégie, Op. 24 was played for 60 minutes using the same speaker volume setting throughout the study. Behavioral stress was assessed using CSS before and after the intervention. At the same time points, mean Tmax values of the right and left ocular thermal windows were calculated using a FLIR E60 thermal camera ($\varepsilon = 0.97$) and ResearchIR software. Pre- and post-intervention CSS scores were compared using the Wilcoxon signed-rank test, whereas ocular Tmax values were compared using a paired-samples t-test. Statistical significance was set at $p < 0.05$.

Following acoustic enrichment, median CSS significantly decreased from 4.00 (IQR: 3.00–4.00) to 3.00 (IQR: 3.00–3.00) ($p < 0.001$). In contrast, mean ocular Tmax values did not change significantly (37.54 ± 0.14 °C vs. 37.62 ± 0.15 °C, mean ± SE; $p = 0.529$).

Behavioral stress scores decreased following acoustic enrichment, whereas no significant change was detected in ocular Tmax. The reduction in CSS suggests that classical music-based acoustic enrichment may be associated with lower behavioral stress in single-caged stray cats. These findings support further investigation of acoustic enrichment as a practical and accessible intervention for feline welfare in shelter and clinical settings.

Keywords: *Acoustic Enrichment, Stray Cats, Cat Stress Score (CSS), Infrared Thermography, Feline Welfare*

[P02] — POSTER PRESENTATION

BEYOND RADIOGRAPHY: BRONCHOSCOPY AS THE GOLD STANDARD IN FELINE AND CANINE RESPIRATORY TRACT DISEASES

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Lower respiratory tract diseases (LRTDs) in dogs and cats present significant diagnostic challenges due to overlapping clinical signs such as chronic coughing, dyspnea, exercise intolerance, and abnormal lung sounds. While thoracic radiography is traditionally the initial imaging modality, it frequently lacks sensitivity and specificity, failing to detect subtle mucosal changes, dynamic airway collapse, or early inflammatory airway disease. Flexible bronchoscopy, combined with bronchoalveolar lavage (BAL), allows direct real-time visualization of tracheobronchial tree morphology and provides cytological and microbiological diagnostic samples.

This study reviewed and evaluated clinical, radiographic, and bronchoscopic findings in 45 animals (25 dogs, 20 cats) presented with chronic respiratory signs. Radiographs were categorized as normal, interstitial, bronchial, or alveolar patterns. Bronchoscopy was performed under general anesthesia using flexible endoscopes (3.0 mm to 4.8 mm outer diameter). Mucosal erythema, edema, luminal mucus/exudate, collapse, and structural deformities were evaluated visually, followed by BAL collection for cytological examination and bacterial/fungal culture.

In 35.5% (16/45) of cases where thoracic radiographs were reported as normal or non-specific, bronchoscopy identified significant structural or inflammatory lesions, including collapse of mainstem bronchi, mucosal hyperemia, and excessive mucus plugging. Cytological analysis of BAL fluids identified specific etiologies: feline asthma (eosinophilic inflammation, 45% of cats), canine chronic bronchitis (neutrophilic inflammation, 52% of dogs), dynamic airway collapse (28% of dogs), and microbial infections (bacterial growth in 24% of cases). Diagnostic concordance between radiography and bronchoscopy was only 48.8%.

Thoracic radiography alone is insufficient for definitive diagnosis of complex feline and canine LRTDs. Bronchoscopy with BAL serves as an essential gold-standard diagnostic tool, enabling accurate disease characterization, targeted antimicrobial therapy, and tailored clinical management.

Keywords: *Bronchoscopy, Lower Respiratory Tract Diseases, Bronchoalveolar Lavage*

[P03] — POSTER PRESENTATION

IMMUNOHISTOCHEMICAL LOCALIZATION AND DISTRIBUTION OF PPAR GAMMA IN THE BITCHES UTERUS DURING THE ESTROUS CYCLE

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Peroxisome proliferator-activated receptor gamma (PPARγ) is a nuclear transcription factor involved in lipid metabolism, inflammatory responses, and steroidogenesis. This study aimed to characterize the cellular localization and immunoreactivity of PPARγ in the canine uterus across estrous cycle stages (proestrus, estrus, diestrus, and anestrus). Uterine tissue samples were obtained from healthy adult dogs (n=40, 10 per group) following ovariohysterectomy. Estrous cycles were confirmed via vaginal cytology. PPARγ expression was evaluated immunohistochemically using the Streptavidin-Biotin Complex method, followed by semiquantitative intensity scoring across uterine compartments. Immunohistochemical analyses revealed cell type and cycle-dependent expression dynamics:

Glandular Epithelium: Expression peaked during estrus and remained high during proestrus and diestrus. It declined significantly during anestrus compared to estrus. Differences among proestrus, estrus, and diestrus were not statistically significant.

Luminal Epithelium: Showed a similar pattern to glandular epithelium, peaking during estrus and showing moderate-to-high reactivity in proestrus and diestrus. Expression was significantly suppressed in anestrus compared to estrus, while other inter-phase changes were non-significant.

Stromal Cells: The highest immunopositivity occurred during estrus and the lowest in anestrus, with no statistically significant differences across estrous cycle periods.

Myometrium: Smooth muscle cells showed a consistent and homogeneous distribution throughout the cycle, with no statistically significant differences between phases.

These findings suggest that PPARγ may act as a nuclear receptor that regulates cyclically changing metabolic activities in cells, maintains intracellular lipid/energy balance, and converts steroid hormone signals into cellular responses.

Keywords: *PPAR gama, Bitch, Estrous Cycle, Immunolocalization, Uterus*

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11th INTERNATIONAL CONGRESS ON ADVANCES IN VETERINARY SCIENCES AND TECHNIQUES (ICAVST 2026)

September 14-17, 2026

Scientific Program

In conjunction with 10th INTERNATIONAL CONGRESS ON ADVANCES IN BIOSCIENCE AND BIOTECHNOLOGY (ICABB 2026)

DAY 1 September 15, 2026		
OPENING CEREMONY		
09:00	Registration	

OPENING SPEECHS **MEHMET AKİF ERSOY CONFERENCE HALL**		
09:30	Prof. Dr. İlker Camkerten - President ESBioTech	Welcome Speech
	Prof. Dr. Hesham A. El Enshasy - Chair - ICABB	Welcome Speech
	Prof. Dr. Tahir Karaşahin - Chair ICAVST	Welcome Speech
	Prof. Dr. Alpay Arıbaş - Rector	Welcome Speech
Welcome Cocktail 10.00		

SESSION 1 **MEHMET AKİF ERSOY CONFERENCE HALL**		
10:30	Prof. Dr. Hesham A. El Enshasy **Orientation Speech**	Bioeconomy of antibiotic industries: Current and future trends
11:00	Prof. Dr. Ida Idayu Muhamad **Keynote Speech**	Engineering functional biomaterials for one health: Integrating food, human health and circular bioeconomy
LUNCH BREAK (12:30 - 13:30)		

SESSION 2 MALAKLI HALL		
Chair Prof. Dr. Ali Evren Haydardedeoğlu		
13:30	Dr. Muhamed Katica **Keynote Speech**	Free-roaming dog population in Montenegro from the perspective of local veterinarians: An assessment of population size and welfare conditions in dog shelters
13:45	Dr. Gaye Bulut	Unexpected uterine leiomyosarcoma in an experimental female wistar rat: multimodal characterization of an incidental finding
14:00	Ayşenur Tural Çifçi	A case of squamous cell carcinoma in the ear loom of a cat
Coffee Break		

CONFERENCE HALL –POSTER SESSION		
Chair Assoc. Prof. Dr. Osman Karabulut		
16:00	Ebru Taşkiran	Evaluation of the effect of acoustic enrichment on behavioral and physiological stress indicators in stray cats temporarily housed in single cages with the cat stress score (css) and infrared thermography
16:00	Sinasi Borgahan Deniz	Beyond radiography: bronchoscopy as the gold standard in feline and canine respiratory tract diseases
16:00	Aslinur Koca	Immunohistochemical localization and distribution of ppar gamma in the bitches uterus during the estrous cycle

DAY 2 September 16, 2026		
ONLINE SESSION		
13:00	Prof. Dr. Mona Elsayed Aboutabl **Keynote Speech**	Novel therapeutic perspectives for hypertrophic cardiomyopathy management
13:30	Dr. Ernesto Hernandez **Keynote Speech**	Deconstructing the substrate: Component-resolved limits to the anaerobic valorisation of lignocellulosic biomass
13:45	Emel Aksoy	Investigation of some enteric viruses in dogs
14:00	Lale Çivi	Investigation of effects of combined trichodoll® and cutibacterium granulosum administration on total oxidant status and total antioxidant status in sheep with dermatophytosis
14:15	Damla Çiğdem Saygı	Prospective evaluation of oxidative stress and hematologic indices in dogs with systemic inflammatory response syndrome
14:30	Almina Gunes	Evaluation of serum tumor necrosis factor-α, interleukin-1β, and interleukin-6 levels in sheep with dermatophytosis
14:45	Dr. Ahmet Cihat Tunç	Evaluation of homocysteine and neutrophil-to-lymphocyte ratio as biomarkers in bovine respiratory disease
15:00	Dr. Uğur Kara	Comparison of three different treatment methods for subclinical mastitis in assaf ewes
15:15	Dr. Hatice Yaren Kuloglu	Comparative functional histology of the digestive system in falco cherrug and related falconiformes species
15:30	Sümeyra Kar	Investigation of growth differentiation factor-15 (gdf-15) levels in cats with hypertrophic cardiomyopathy
15:45	Dr. Meziane Rahla	Fertility management in dairy cow
16:00	Oussama Mahmoudi	Advances in animal housing design and their physiological impact on livestock health and productivity
16:15	Ahmed Jamila Mashi	Aspergillus fumigatus metabolites and conidial suspensions: novel biocontrol agents for major malaria vector anopheles mosquito larvae from sub-saharan africa
16:30	Dayyabu Shehu	Inhibitory activity of total glutathione s transferase activity in albino rats by ethanolic extracts of adansonia digitata
16:45	Adamu Jibril Alhassan	Insecticide resistance, vector dynamics and dengue transmission in Nigeria: a systematic review and meta-analysis
17:00	Maryam Abdulkadir Dangambo	Influence of physicochemical parameters on anopheles gambiae larval density in rural and peri-urban settings of kano state, Nigeria
17:15	Monisha Isaac	Green biotechnology approaches for controlling fish-borne zoonotic diseases and antimicrobial resistance: a one health perspective
17:30	Mai Magdy Elsayed	A proposed combined chitosan–mesenchymal stem cell strategy for helicobacter pylori management: molecular docking evaluation of major virulence factors
17:45	Leyla Galandarli	In silico characterization of glycyrrhizin admet properties: pharmacokinetic behavior, metabolic profile, and toxicity assessment

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Türkiye'den gelen katılımcılar tarafından 10 (37,04) sözlü ve 3 (%11,11) poster olmak üzere toplam **13 (48,15)** sunum yapılırken, **Türkiye dışından** gelen katılımcılar tarafından **14 sözlü (%51,85)** sunumu gerçekleştirildi.

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