7TH INTERNATIONAL SCIENTIFIC CONFERENCE ON FOOD SAFETY AND HEALTH (ISCFSH)

Theme: Climate Resilient Food Security and Safety

10th May 2025 , Saturday

Venue

Auditorium, BARC, Farmgate, Dhaka-1215

বাংলাদেশ সোসাইটি ফর সেফ ফুড
BANGLADESH SOCIETY FOR SAFE FOOD

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7th International Scientific Conference on

Food Safety and Health

Theme : Climate Resilient Food Security and Safety

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Farmgate, Dhaka-1215

Compiled and Edited by
Scientific and Publication Sub-committee
7th International Scientific Conference on
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INDEX

Editorial

We are privileged to present the Program and Abstract Book for the 7th International Scientific Conference on Food Safety and Health 2025, hosted by the Bangladesh Society for Safe Food (BSSF). The theme for this year, "Climate Resilient Food Security and Safety," emphasizes the critical global need to ensure the availability of safe and nutritious food amidst the intensifying impacts of climate change.

Around the world, climate change is exerting profound pressure on food systems-disrupting weather cycles, amplifying extreme climatic events, and heightening the spread of crop and livestock diseases. These factors are diminishing agricultural productivity, degrading food quality, and amplifying risks to food security, especially in fragile and resource-limited contexts. As these threats escalate, it is increasingly essential to position food safety as an integral part of resilient food security strategies.

Food safety is a cornerstone of public health and must be maintained throughout the food chain-from field to fork. With rising global temperatures, water shortages, and growing environmental degradation, the incidence of foodborne threats such as pathogenic microbes, chemical contaminants, and toxins is becoming more frequent. Addressing these challenges requires innovative thinking, scientific precision, and the implementation of forward-looking policies and practices that can adapt to the realities of a changing climate.

This conference creates a dynamic and inclusive space for interdisciplinary dialogue, scholarly exchange, and collaborative problem-solving. This year, we are proud to have presented a total of 87 abstracts 21 oral and 66 poster presentations across three scientific sessions, with participation from various reputed institutions. The research presented in this volume captures a diverse array of perspectives and methodologies aimed at enhancing the safety, sustainability, and resilience of food systems in a climate-sensitive world.

We extend our sincere appreciation to the scholars, authors, and experts who have contributed their valuable work to this collection. We also thank the esteemed keynote speakers, session moderators, and presenters for their scholarly commitment and meaningful engagement. Our gratitude further goes to the editorial and review committees for their diligent efforts in maintaining the scientific quality and consistency of this publication.

We are confident that this conference will stimulate insightful discussions, drive innovation, and build partnerships that lead to lasting solutions. May this book serve as a valuable academic resource and a beacon for action in the pursuit of a safer, climate-resilient food future for all.

Dr. KHM Nazmul Hussain Nazir
Member Secretary
Scientific & Publication Sub-committee

Dr. Mohammad Dalower Hossain Prodhan
Convenor
Scientific & Publication Sub-committee

7th International Scientific Conference on Food Safety and Health

Theme: Climate Resilient Food Security and Safety

PROGRAM

Venue : **Auditorium, BARC, Farmgate, Dhaka-1215**
Date : 10th May 2025 (Saturday)
08:00-09:00 : Registration & Breakfast

09:00-10:10 : **SCIENTIFIC SESSION-1: Safe Food Production and Processing**

INAUGURAL SESSION

10:10-10:15 : Guests take their seats and Recitation from Holy Quran
10:15-10:20 : Welcome Speech by
Dr. Mohammad Sorwar Jahan
General Secretary, Bangladesh Society for Safe Food (BSSF)
10:20-10:50 : Keynote Presentation by
Dr. P. Chandra Shekara, PhD
Director General, Centre on Integrated Rural Development for Asia and the Pacific (CIRDAP)
10:50-11:00 : Address by Guest of Honor
Mr. Shamsul Arefin Khaled
President , Bangladesh Poultry Industries Central Council (BPICC)
11:00-11:30 : Address by Special Guests
Prof. Dr. Md. Alimul Islam
Vice-Chancellor, Sylhet Agricultural University, Sylhet
Mr. Zakaria
Chairman, Bangladesh Food Safety Authority (BFSA)
Dr. Md. Abu Sufiun
Director General, Department of Livestock Services (DLS)
11:30-11:40 : Declaration of Safe Food Award by
Dr. Mohammad Rafiqul Islam
Founder President, BSSF and Member Director, Planning and Evaluation Division, BARC
11:40-12:00 Address by Chief Guest
Farida Akhter
Honorable Adviser, Ministry of Fisheries and Livestock , Government of the People's Republic of Bangladesh
12:00-12:05 : Address by Chairperson
Prof. Dr. Md. Khaled Hossain
President, Bangladesh Society for Safe Food (BSSF)
12:05-13:00 : Poster Session
13:00-14:00 : Prayer & Lunch

14:00-15:10 : **PARALLEL SCIENTIFIC SESSIONS**

SCIENTIFIC SESSION-2 : Food Safety and Microbiology
Auditorium, BARC

SCIENTIFIC SESSION-3 : Health, Diet and Nutrition
Conference Room 1, BARC

15:10-15:30 : Tea Break

CLOSING SESSION

15:30-15:35 : Guests take their seats
15:35-15:40 : Address by
Prof. Dr. KHM Nazmul Hussain Nazir
Founder Secretary, BSSF; Member Secretary, Scientific and Publication Sub Committee
15:40-15:55 : Mastering of the Ceremony
15:55-16:05 : Address by Special Guest
Dr. Md. Harunur Rashid
Director, SAARC Agriculture Centre, Dhaka
16:05-16:20 : Address by Chief Guest
Dr. Md. Abdur Rouf
Director General, Department of Fisheries (DOF)
16:20-16:25 : Vote of thanks by
Dr. Sk Shaheenur Islam, Publication Secretary, BSSF
16:25-16:30 : Address by the Chairperson
Prof. Dr. Md. Khaled Hossain, President, Bangladesh Society for Safe Food (BSSF)
16:30-17:00 : AGM

7th International Scientific Conference on Food Safety and Health

Scientific Session-1: Safe Food Production and Processing

Auditorium, BARC

Session Chair : **Prof. Dr. Mohammad Shoeb,** Dept. of Chemistry, Dhaka University (DU)
Co-Chair : **Prof. Dr. Amir Hossain**, Dept. of Genetics and Plant Breeding, Bangladesh Agricultural University (BAU)
Rapporteurs : **Dr. Rakhi Chacrabati**, Associate Professor, Interdisciplinary Institute for Food Security, BAU
Dr. Muhammad Abdul Mannan, Assistant Professor, Dept. of Microbiology and Parasitology, SBAU

Time	Code	Title and Authors	Institute
09:00	O-01	**Assessment of tilapia (*Oreochromis niloticus*) seed quality in pond and recirculatory aquaculture system in relation to climatic and water quality parameters** *Safiara Nusrat Nova, A.K. Shakur Ahammad, Mohammad Mahfujul Haque*	BAU
09:10	O-02	**Development of heat resistance mushroom variety through recombinant DNA technology** *Nusrat Jahan Tamanna, Jebunnahar khandakar*	IUB
09:20	O-03	**Effect of different exogenous chemicals on morpho-physiology, yield and yield attributes of strawberry genotypes during high temperature in summer season** *Najra-Tan-Nayeem Salwa, Sadia Shabnam Swarna, Sharifunnessa Moonmoon*	SAU
09:30	O-04	**Development of bio-consortia for the management of bacterial wilt of brinjal** *Tajrin Jahan, Ummey Qulsum, Md. Mohidul Hasan*	HSTU
09:40	O-05	**Growing tomato under rooftop condition: Influence of planting pot, potting substrate and plant genotype on growth, yield and insect pests** *Noor Mohammad Oyes Korone, Nahian Nizia, Amit Das, Rasendra Talukder, Suprokash Deb Sammya, Punwasryee Bishwas, Eti Akter, Md. Al Jubayer Shawon, MD.Nazirun Uddin Shihab, Chandra Kanta Dash*	SAU
09:50	O-06	**A case study on ecofriendly fish farming by reducing the usage of antibiotics and disinfectants through probiotics and immune -boosting supplements at Kalaroa, Shatkhira** *Mohammed Tarique Sarker, Md. Ariful Islam, Md. Asraful Islam*	Fishtech
10:00	O-07	**Green analytical strategies for food safety: ATR-FTIR spectroscopy and chemometrics for detecting common food adulteration in Bangladesh** *Md. Atikul Islam*	HSTU

Parallel Scientific Sessions

Scientific Session-2 : Food Safety and Microbiology

Auditorium, BARC

Session Chair : **Prof. Dr. Mst. Minara Khatun**, Dept. of Microbiolgy and Hygiene, Bangladesh Agricultural University (BAU)
Co-Chair : **Prof. Dr. Sk. Ahmad Al Nahid**, Dept. of Fisheries Resource Management, CVASU
Rapporteurs : **Prof. Dr. Md. Shafiqul Islam**, Dept. of Microbiolgy and Hygiene, Bangladesh Agricultural University (BAU)
Dr. Nazmi Ara Rumi, Associate Professor, Dept. of Microbiolgy, HSTU

Time	Code	Title and Authors	Institute
14:00	O-08	**Development of multi epitope subunit vaccines against emerging carp viruses cyprinid herpesvirus 1 and 3 using immunoinformatics approach** *Nurul Amin Rani, Tanjin Barketullah Robin , Anindita Ash Prome , Nadim Ahmed, Abu Tayab Moin , Rajesh B Patil , Mohammad Nurul Azim Sikder, Md Nazmul Islam Bappy, Dilruba Afrin , Ferdaus Mohd Altaf Hossain, Tofazzal Islam , Kazi Md Ali Zinnah*	SAU
14:10	O-09	**Prevalence, antimicrobial resistance and ARG profiling of colistin-resistant *E. coli* and *Klebsiella* isolates from street food samples in Bangladesh** *Fariha Chowdhury Meem, Jahid Hasan Shourove, Md Mosaddek Hasan, Abul Azad Kalam, GM Rabiul Islam*	SUST
14:20	O-10	***In silico* identification and characterization of novel drug targets in *Treponema denticola* (Strain ATCC 35405 / DSM 14222 / CIP 103919 / JCM 8153 / KCTC 15104): A subtractive genomics approach** *A.R.K. Chowdhury, S. M. Billah, M. B. Meem, M. H. Mahi, T. Zaman, S. K. Onia, A. F. Ishita, M. M. Hossain*	IUB

Time	Code	Title and Authors	Institute
14:30	O-11	**Molecular characterization of antimicrobial resistance and virulence genes in *E. coli* from backyard poultry and humans in rural Bangladesh: Zoonotic transmission potential** *Zhokhar Dudayev, Md. Moinul Kabir Bijoy, Umme Fariha Mahim, Mehedi Hasan Badhon, Joy Sarker Emon, Md. Sayedul Islam, Mohammad Ali Zinnah*	GAU
14:40	O-12	**Multidrug resistant and ESBL producing *Salmonella* spp. isolated from duck and quail at Dinajpur district** *FA Monika, T Ashraf, E Hassan, SI Tithi, NE Alam, NA Rumi, MK Hossain*	HSTU
14:50	O-13	**Isolation and detection of multidrug-resistant bacteria from mud crabs (*Scylla serrata*) of coastal regions in Bangladesh** *Md Saif Uddin, Sourav Chakraborty, Taslima Akter, Ashik Ahmed Mokta, Lorin Akter, Most. Nahida Khatun, Adity Chowdhury, Hori Mohon, Saruar Rahman Hridoy, Sumaya Siddika Shornali, Md. Hadiuzzaman, Mahbubul Pratik Siddique, Md. Alimul Islam, Muhammad Tofazzal Hossain*	BAU
15:00	O-14	**Detection of multidrug-resistant bacteria from milk of suspected cows suffering from subclinical mastitis** *Md. Hasibul Hasan, Md. Aktaruzzaman, Md. Ruhul Amin, Sourav Chakraborty, Afsana Akter Mimi, Most. Nahida Khatun M, Ankita Das, Akhi Milon, Sadia Islam Chadnee, Shahida Akter Smrity, Junaid Sarker Ifte, Md. Hadiuzzaman, Md. Ariful Islam, A K M Anisur Rahman, Md. Alimul Islam , Muhammad Tofazzal Hossain*	BAU

Parallel Scientific Sessions
Scientific Session-3 : Health, Diet and Nutrition
Conference Room 1, BARC

Session Chair : **Prof. Dr. A.K.M. Nowsad Alam**, Dept. of Fisheries Technology, BAU
Co-Chair : **Prof. Dr. Md. Jahangir Alam,** Dept. of Animal Production & Management, SBAU
Rapporteurs : **Prof. Dr. Mofassara Akter**, Dept. of Animal Nutrition, Genetics & Breeding, SBAU
Dr. Md. Zaminur Rahman, Lecturer, Dept. of Animal Production, GB

Time	Code	Title and Authors	Institute
14:00	O-15	**An investigation regarding the impact of casing materials on the antioxidant, antimicrobial, properties of *Calocybe indica*** *Jebunnahar khandakar, Mahiea Hossain Mahi*	IUB
14:10	O-16	**Assessment of quality and safety attributes of fresh, chilled and frozen broiler meat sold in different retail markets at Dhaka city, Bangladesh** *Masud-Bin-Tuhin, Zannatul Naim, Md. Jahidul Islam, Md. Asaduzzaman, Muhammad Ashad Kabir, Md. Saiful Islam*	SBAU
14:20	O-17	**Study on effects of sanitized and unsanitized eggs marketing on public health in Bangladesh** *Md Romon Hossain, MMH Tamim, Md. Abdul Mazed Salafi, Sujon Talukder, MJ Alam, Abdullah Rahman, Md Zaminur Rahman*	GB
14:30	O-18	**Health benefits and market potential of honey-sweetened cold coco coffee: An analysis of consumer preferences and glycemic impact in Bangladesh** *Ms. Maria Sultana Munmun, Md. Saifur Rahman, Sumaiya Sultana Ananna*	GSTU
14:40	O-19	**Comparative assessment of broiler meat quality at different slaughter weights in retail markets** *Md. Jahidul Islam, Zannatul Naim, Masud-Bin-Tuhin, Md. Asaduzzaman, Muhammad Ashad Kabir, Md. Saiful Islam*	SBAU
14:50	O-20	**Current trends of chicken processing in different wet marketplaces of Dhaka city: A food safety and public health concern** *Md. Saiful Islam, Md. Abdus Shabur Talukder, Zannatul Naim, Mirza Sadi Salman Siyam, Rahat Nahiyan Ramim, Md. Asaduzzaman, Md. Arafat Hossain, Abdur Rahman*	SBAU
15:00	O-21	**Tuberculosis in captive deer, slaughtered cattle and goats; Insights into tuberculosis of food animals and their public health concern** *Tasnia Anjum Etu, Mohammad Zakir Hossain, SM Shariful Hoque Belal, Munmun Pervin, Md. Abu Hadi Noor Ali Khan*	BAU

Adviser
Ministry of Fisheries and Livestock
Government Of the People's Republic of Bangladesh
Bangladesh Secretariat, Dhaka

Message

I am pleased to learn that the Bangladesh Society for Safe Food (BSSF) is launching a memorandum during the "7th International Scientific Conference on Food Safety and Health." focusing on the theme of "Climate Resilient Food Security and Safety". The BSSF's dedicated efforts to safeguarding the quality and healthiness of food in Bangladesh are commendable, and I applaud their tireless and timely work in addressing food safety concerns in the country

The Department of Livestock Services (DLS) is dedicated to ensuring food safety throughout the primary production and distribution networks (PDNs). They focus on controlling pathogens in food animal production and collaborate with various stakeholders within the food systems. Additionally, the DLS conducts surveillance and monitoring activities, investigates outbreaks of foodborne diseases, and responds accordingly, particularly when linked to animal production inputs as well as animal products. They enforce relevant rules and regulations as control measures.

Food is the most crucial element in our lives. It provides the energy necessary for maintaining health and promoting happiness. However, in today's intricate and intertwined circumstances. ensuring safer food presents a significant challenge. Quality takes precedence over quantity when it comes to food. Therefore, if the quality of food is compromised, it can pose potential harm to our health. Therefore, it is imperative that we raise awareness at all levels.

Safe and nutritious food plays a vital role in maintaining the health and well-being of individuals, impacting both their physical and mental conditions. Consequently, it is essential to raise public awareness about the significance of consuming safe and healthy food, in collaboration with all relevant stakeholders. Various stakeholders, including consumers, producers, and government agencies, have distinct roles in ensuring the safety of food. Therefore, food safety is a shared responsibility of the producers and all related to food chain from farm to the table.

The Bangladesh Society for Safe Food (BSSF) is committed to enhancing awareness through its 7th International Scientific Conference on Food Safety and Health, which aims to promote food safety in Bangladesh.

I extend my best wishes for the resounding success of the 7th International Scientific Conference on Food Safety and Health.

(Farida Akhter)

Vice-Chancellor
Sylhet Agricultural University

Message

I am very much delighted to be here today as a special guest on this specious occasion. I would like to extend my heartfelt gratitude and best wishes to the Bangladesh Society for the Safe Food (BSSF) 7th International Scientific Conference on Food Safety and Health of 10th of May 2025. The theme of the conference of this year is "Climate Resilient Food Security and Safety," which is time demand and critically important, reflecting the urgent need for global and local action on the face of unprecedented climate challenges.

Food security and food safety are two foundational pillars for the health and well-being of a nation. In the context of climate change, these pillars are increasingly vulnerable. Rising temperatures, erratic weather patterns, floods, and droughts not only threaten for much food production but also has an impact on food quality and safety. It is essential for scientists, policymakers, industry leaders, and all stakeholders to come together to exchange ideas, and innovate strategies to ensure that food systems become more resilient, sustainable, and safe for all classes and ages of human population.

Food safety matter deeply concerns with the consumers, producers, and governments alike, with cach group playing a vital role for safeguarding the supply of healthy food from farm to the fork. Ensuring that the food we produce and consume must be healthy and safe enough which requires collective responsibility. Thus, along side the strict enforcement of existing rules and regulations of the country through collaboration among all stakeholders, it will definitely keeps important role of raising public awareness about the significance of producing and consuming safe healthy and nutritious food.

The Bangladesh Society for Safe Food has been playing a pioneering role in creating awareness, promoting research, and advocating for evidence-based policies related to food safety originating from plants and animal source. By organizing this international conference, BSSF continues to provide a vital platform for the scientists scholars, researchers, and policymaker share their insights, experiences, and technological innovations to control adulteration in consumable food. I am confident that the 7th International Scientific Conference will foster meaningful discussions, forge new partnerships, and inspire actionable solutions to the pressing challenges we face everyday. I would like to recommend BSSF's to keep continue the leadership, organizing committee, and all participants for their dedication and efforts in advancing for ensuring food safety and health food supplies for the consumers of Bangladesh and beyond.

I wish the conference every success and a fruitful outcome for all.

(Professor Dr. Md. Alimul Islam)

Chairman

Bangladesh Food Safety Authority
Ministry of Food
Government of The People's Republic of Bangladesh

Message

It is highly appreciable that "Bangladesh Society for Safe Food (BSSF)" is going to publish a memorandum on the event of "The 7th International Scientific Conference on Food Safety and Health." The conference will focus on "Climate Resilient Food Security and Safety". The Bangladesh Society for Safe Food (BSSF) is exerting a great deal of effort for the safety of food.

Bangladesh, as well the World, is facing many difficulties in overcoming the new challenges to meet the demand for safe food. Industrialization and urbanization have developed new preferences in society. Novel initiatives and measures were developed to meet these preferences, hence exerting strains on natural resources. This led to erosion of soil, loss of biodiversity, degradation of landscape and pollution of the environment. As a result, new challenges have arisen in terms of food safety and the production of food in a sustainable manner. Comprehensive joint effort is needed to overcome these challenges.

The Bangladesh Society for Safe Food (BSSF) has been tirelessly working in coordination with the Ministry of Food, Ministry of Agriculture, Ministry of Fisheries and Livestock, Bangladesh Food Safety Authority, and many other departments and organizations, both domestic and international, to raise awareness among the people of Bangladesh to ensure that everyone has access to safe food. I am very grateful for being a part of this initiative.

I would like to extend my deepest appreciation to those individuals who have contributed to the accomplishment of the desired goals. I would like to extend my most sincere gratitude to all of the esteemed academics, instructors, scientists, nutritionists, veterinarians, biologists, agronomists, etc. who have contributed to this conference.

(Zakaria)

Director General

Department of Livestock Services
Government of the People's Republic of Bangladesh

Message

I am pleased to learn that the Bangladesh Society for Safe Food (BSSF) is launching a memorandum during the "The 7th International Scientific Conference on Food Safety and Health," focusing on the theme of "Climate Resilient Food Security and Safety". The BSSF's dedicated efforts to safeguarding the quality and healthiness of food in Bangladesh are commendable, and I applaud their tireless work in addressing food safety concerns in the country.

The Department of Livestock Services (DLS) in Bangladesh is dedicated to ensuring food safety throughout the primary production and distribution networks (PDNs). They focus on controlling pathogens in food animal production and collaborate with various stakeholders within the food systems. Additionally, the DLS conducts surveillance and monitoring activities, investigates outbreaks of foodborne diseases, and responds accordingly, particularly when linked to animal production inputs or animal products. They also implement control measures by enforcing relevant rules and regulations in this regard.

Food ranks as the third most crucial element in our lives, following air and water. It provides the energy necessary for maintaining health and promoting happiness. However, in today's intricate and intertwined circumstances, ensuring safer food presents a significant challenge. Quality takes precedence over quantity when it comes to food. Therefore, if the quality of food is compromised, it can pose potential harm to us. Given the importance of food safety, it is imperative that we raise awareness at all levels.

Safe and nutritious food plays a vital role in maintaining the health and well-being of individuals, impacting both their physical and mental conditions. Consequently, it is essential to raise public awareness about the significance of consuming safe and healthy food, in collaboration with all relevant stakeholders. Various stakeholders, including consumers, producers, and government agencies, have distinct roles in ensuring the safety of food. Therefore, food safety is a shared responsibility that ensures the food we consume is healthy from the farm to the table.

The Bangladesh Society for Safe Food (BSSF) is committed to enhancing awareness through its 7th International Scientific Conference on Food Safety and Health, which aims to promote food safety in Bangladesh.

Above all, I extend my best wishes for the resounding success of the 7th International Scientific Confecence on Food Safety and Health.

(Dr. Md. Abu Sufiun)

Director General
Department of Fisheries
Government of the People's Republic of Bangladesh

Message

With great enthusiasm, I express my warm greetings to the organizers, speakers, and participants of the 7th International Scientific Conference on Food Safety and Health with the theme "Climate Resilient Food Security and Safety", a pivotal event at the Bangladesh Agricultural Research Council (BARC), Dhaka. The scientific conference, organized by Bangladesh Society for Safe Food (BSSF), marks a significant step in advancing the discourse on sustainable climate resilient food security and food safety, which are crucial for the continued development of our nation's food sectors.

As the Director General of the Department of Fisheries (DoF), I recognize the vital role that sustainable aquaculture plays in ensuring food security, promoting economic growth, and protecting the natural aquatic ecosystems and food safety. With the growing challenges posed by climate change, overfishing, and resource depletion, it is essential that we focus on sustainable practices that can ensure the long-term viability of our fisheries and aquaculture sectors and it's safety measures.

DoF is committed to supporting initiatives that promote sustainable management for fisheries, food security and best practices in the sector. This conference serves as an excellent platform for knowledge sharing, where experts from around the world can exchange their insights and experiences to help shape the future of safe aquaculture and fisheries production. I am confident that the outcomes of this event will help inform policies and strategies that benefit the food safety as a whole.

I congratulate Bangladesh Agricultural Research Council for hosting and Bangladesh Society for Safe Food for organizing such a crucial event, and wish the conference participants a fruitful and successful gathering. I look forward to the meaningful discussions that will take place and the valuable outcomes that will come up from this conference.

(Dr. Md. Abdur Rouf)

Director
SAARC Agriculture Centre
Dhaka, Bangladesh

Message

It is my pleasure to know that the "Bangladesh Society for Safe Food (BSSF)" is going to publish a memorandum in the event of "7th International Scientific Conference on Food Safety and Health." The conference will focus on "Climate Resilient Food Security and Safety" as the main theme. The BSSF is exerting a great deal of efforts to assurance the safety of food. I appreciate their effort with hard work.

By the year 2050, it is anticipated that the total human population of the world would have reached about of 9.70 billion. It is a pressure for us to assurance the access to food that population. Moreover, we are to ensure the safe and nutritious food as well. To fulfill the demand for food in the year 2050, production levels will need to be higher than they were in the year 2012 by more than 50 percent. The demand for meat, dairy products, and especially, crops such as fruits, nuts, and vegetables has grown as a result of the ongoing growth in incomes and improvements in living circumstances of the emerging nations. Similarly, the consumers in industrialized nations have developed preferences for special quality food such as organic food. The increased demand for food has already put a stress on natural resources which has led to the erosion of soil, the loss of biodiverse landscapes, and the pollution of the environment across the world. This has presented new challenges in terms of food safety and the production of food in a sustainable manner.

The Bangladesh Society for Safe Food (BSSF) has been tirelessly working in coordination with the Ministry of Food, Ministry of Agriculture, Ministry of Fisheries and Livestock, Bangladesh Safe Food Authority, and a variety of organizations both local and international to raise awareness among the people of Bangladesh to ensure the access to safe food.

I would like to extend my deepest appreciation to those individuals who, by conveying the message, have contributed to the accomplishment of the goals associated with our memorial. I would like to extend my most sincere gratitude to all of the esteemed academics, instructors, scientists, nutritionists, veterinarians, biologists, and agronomists, etc. who have contributed in this conference.

(Dr. Md. Harunur Rashid)

BPICC

President
Bangladesh Poultry Industries
Central Council (BPICC)

Message

Ensuring food safety is fundamental to safeguarding human and animal health. Unsafe food remains a major cause of illness and mortality worldwide, with the World Health Organization highlighting the rising incidence of foodborne diseases as a critical public health priority requiring coordinated, multi-sectoral action.

Persistent threats like microbial contamination and harmful chemical residues, including Salmonella, E. coli, pesticides, and antimicrobials, continue to challenge global food safety. Tackling these risks begins at the farm level, where the misuse of agrochemicals and antimicrobials jeopardizes public health. Implementing good husbandry practices, robust health management, and ensuring safe feed are essential to mitigating these threats across the livestock sector.

We strongly advocate for a "One Health" approach — recognizing the interconnectedness of human, animal, and environmental health — to address food safety and security challenges more effectively. The livestock sector, including poultry and large ruminants, bolsters national food safety and security. However, the escalating impacts of global warming pose significant threats to livestock production, notably through increased heat stress indices and deteriorating water availability. Urgent investment in research and development of climate-resilient poultry and livestock breeds, sustainable farming technologies, and circular production systems is critical to fortifying food systems against climate-induced risks.

To ensure meaningful progress, the standardization, benchmarking, and compliance processes must involve a broad spectrum of stakeholders and must be tailored to the specific realities and challenges of Bangladesh, rather than relying on generalized, imported models. Experts from all relevant sectors must be centrally engaged in the standard-setting process to ensure credibility, adaptability, and practical applicability.

Awareness-building and knowledge dissemination are critical to systemic transformation. In this regard, we commend the Bangladesh Society for Safe Food (BSSF) for organizing the 7th International Scientific Conference on Food Safety and Health under the theme "Climate Resilient Food Security and Safety," reflecting the growing commitment to strengthening public health through improved food safety measures.

I believe that BSSF will continue to be instrumental in advancing Bangladesh's food safety agenda, and I extend my best wishes for the success of this important conference in paving the way toward a safer, healthier, and more resilient future.

(Mr. Shamsul Arefin Khaled)

President
Bangldesh Society for Safe Food

Message

It is my great pleasure to inform you that, "Bangladesh Society for Safe Food" (BSSF) is going to organize its 7th International Scientific Conference on 10 May 2025. This year the theme of the conference is "Climate Resilient Food Security and Safety". It is very well known to us that the world's climate is changing very fast. Global warming is one of the most important changes. Thus, we have to change and adopt our agricultural production system. To ensure the food security we need to produce salt and heat tolerant crops, vegetables, fruits and fishes. In addition, we need to rear heat tolerant breeds of poultry and livestock for increased production of meat, milk and eggs. For increased agricultural production we are using chemical fertilizers, insecticides, pesticides, growth promoting hormones, huge antibiotics etc. Irrational use of these chemicals may cause unsafe food production.

In addition, microbial contamination, toxins or heavy metals may also cause food unsafe. Food may also be unsafe during storing, transportation, processing, manufacturing, cooking or during eating. If the farmers use insecticides or pesticides just before harvesting of fruits or vegetables then they may become unsafe. If the perishable agricultural products (such as fruits, vegetables etc.) are not preserved properly before marketing then they may be damaged and unsafe. During transportation perishable food may also become damaged and unsafe if cooling system is not utilized. Food may become unsafe if they are adulterated. If the foods are not cooked or prepared hygienically, they may become unsafe. Washing of fruits or salad vegetables with contaminated water may make food unsafe. Serving of ready-to-eat food by contaminated hands may make them unsafe. Even during eating food may become unsafe due to use of unclean or contaminated hands. Use of low-quality edible oil, or reuse of edible oil by the street vendors or restaurants may make the food unsafe. During manufacturing food may also become unsafe, if Good Manufacturing Practice is not followed properly. Trans-fat is one of the important causes of making manufactured food unsafe. Our goal is to ensure safe food to the society as well as to the nation. To achieve the goal, we are trying to make aware people through conducting seminar, conference, symposium, TV talk shows and publishing books on safe food.

Safe food is everyone's business. I hope, in this conference there will be a big gathering of many national and international scientists, researchers, safe food specialists, government and non-government officials from different sectors, industrialists and farm owners. They will share their ideas, experience, scientific knowledge and research findings which will help to ensure safe food for the people. Much communication media (such as Radio, TV etc.) or social media may play a vital role to create awareness among people on safe food.

I am very grateful to our Honorable Chief Guest, Special Guests, Key Note Speaker, Delegates, Chair and Co-Chair of different Scientific Sessions, Scientists, Researchers, Participants, Life members and Media Personnels to make the conference successful. I am also grateful to the sponsors for their financial support. I would like to give thanks to different sub-committees for their endless efforts to make the conference successful. I would like to give special thanks to Bangladesh Agricultural Research Council to provide their wonderful venue.

(Professor Dr. Md. Khaled Hossain)

General Secretary

Bangldesh Society for Safe Food

Message

Bangladesh Society for Safe Food (BSSF) is holding its 7th International Scientific Conference on Food Safety and Health (ISCFSH) with the theme "Climate Resilent Food Security and Safety" a timely initiative and priority agenda for Bangladesh. Ensuring the safety of foods derived from fish, livestock, crops, and beverages are critical to developing a talented and visionary nation. Food borne illnesses may result from consuming foods contaminated by microbial pathogens, toxic chemicals, or heavy metals. Ensuring food safety is becoming increasingly important in the context of changing food habits, the popularization of mass catering establishments, and the globalization of our food supply.

Effective and visible social movements and strong political commitment are time befitting to face the issues arising from unsafe foods in Bangladesh. However, we have made remarkable progress in achieving food and nutritional security in Bangladesh. Creating awareness among the stakeholders, i.e., producers to consumers, to ensure safe food is essential. The government is committed to ensuring food safety, and as a result, Bangladesh has enacted the food safety act.

The BSSF works closely with other professionals, policymakers, food producers, traders, and consumers. The BSSF is becoming now well-known in Bangladesh. By this time, more than 280 life members have joined the Society from different fields and food industries. Congrats to all! I believe the BSSF will do better in the future with the engagement of potential new members.

The day-long event will bring together relevant academicians, researchers, industry

representatives and policymakers. I believe this conference will provide policymakers with the necessary guidelines for ensuring safe food based on scientific evidence.

I am grateful to the Chief Guest, Special Guests, Keynote Speaker, Chairs, Co-chairs, Delegates, and Participants from home and abroad for their presence and cooperation in successfully holding this occasion. I believe that in the future Bangladesh Society for Safe Food (BSSF) will work together with all stakeholders to ensure safe food in the country as well as globally. We keep in our minds that the "Food Safety is Everyone's business" to aware the public and entrepreneurs.

It's my privilege to be a part of this conference and I wish you every success.

(Dr. Mohammad Sorwar Jahan)

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CIRDAP

Biography

Keynote Speaker

Dr. P. Chandra Shekara is a distinguished agricultural scientist, policy expert, and rural development leader with over three decades of experience in agricultural extension, rural development, agri-entrepreneurship, and institutional management. Born in India, he pursued his academic career in agricultural sciences at the University of Agricultural Sciences, Bengaluru, Karnataka, earning a B.Sc. in Agriculture Extension in 1987, an M.Sc. in 1989, and a Ph.D. in 1999. His doctoral research focused on developing a strategy for extension management in India's coffee industry, a contribution recognized for its practical relevance. He graduated with an impressive CGPA of 9.57/10.00 and was honored with three prestigious gold medals: The University Gold Medal for the highest CGPA, the Dr. K.A. Jalihal Gold Medal for the best Ph.D. student in Agricultural Extension, and the Dr. R. Dwarakinath Gold Medal.

Throughout his career, Dr. Shekara held leadership roles in three major national institutions under the Ministry of Agriculture and Farmers' Welfare, Government of India: The National Institute of Agricultural Extension Management (MANAGE), the CCS National Institute of Agricultural Marketing (NIAM), and the National Institute of Plant Health Management (NIPHM). In these roles, he was responsible for training, research, consultancy, policy advocacy, education, international collaboration, government project implementation, promotion of agri-entrepreneurship, and strengthening agricultural data systems. His innovative vision and execution significantly advanced India's agricultural extension and entrepreneurship ecosystem.

In recognition of his exceptional contributions, Dr. Shekara has received several prestigious awards, including the "Extension Leadership Award" at the International Conference on Extension Education in 2023 and the "NITTE–Karnataka Bank Ltd Lifetime Achievement Award" in 2019.

In 2024, he was appointed as the Director General of the Centre on Integrated Rural Development for Asia and the Pacific (CIRDAP), headquartered in Dhaka, Bangladesh. He will serve in this role until 2028. At CIRDAP, he continues to apply his vast expertise to foster integrated rural development across member countries in Asia and the Pacific. He is committed to building on the legacy of his predecessors and elevating CIRDAP as a center of excellence in rural transformation.

Dr. P. Chandra Shekara stands as an inspiring figure in the field of agricultural and rural development, whose work continues to impact farmers, researchers, and policymakers across national and international platforms.

Dr. P. Chandra Shekara
Director general of CIRDAP

Keynote

Climate Resilient Food Security and Safety

Dr. P. Chandra Shekara
Director General of Centre on Integrated
Rural Development in Asia and Pacific (CIRDAP)

As we are aware, Climate-resilient food security and safety comes through building systems that can withstand and adapt to the impacts of climate change, ensuring food availability and access for all. This involves promoting Climate Smart Agricultural practices, diversifying food sources, and strengthening social safety nets to protect vulnerable populations.

Bangladesh's Agriculture sector is the country's main source of food security, employment, and poverty alleviation. More than 70 percent of Bangladesh's population and 77 percent of its workforce lives in rural areas. Nearly half of all Bangladeshi workers and two-thirds of workers in rural areas are directly employed in Agriculture. About 87 percent of the nation's rural households rely on Agriculture for at least part of their income. With one of the fastest rates of productivity growth in the world (averaging 2.7 percent per year since 1995, second only to China), Bangladesh's Agriculture sector accounted for 90 percent of the country's reduction in poverty

Bangladesh faces growing demand for food and pressure from rapid land use change including significant losses of arable land. Population increases to an estimated 186 million by 2030 and 202 million by 2050, increasing income levels, and rapid urbanization at a rate of 3.5 percent annually are expected to shift diets away from rice and wheat toward animal-based diets. At the same time, while Bangladesh produces almost all its own rice, current yield trends indicate production will not be able to satisfy growing demand for cereals (including rice), which is projected to increase 21 percent by 2030 and 24 percent by 2050. Given the increasing population density and continued loss of arable land caused by urbanization and other factors, enhancing the productivity of rice and other staple foods remains crucial. These trends suggest that Bangladesh must sustainably increase food production on far less arable land per capita to continue to strive for self-sufficiency in agricultural production.

Bangladesh, while responsible for only 0.4% of global greenhouse gas emissions, is highly vulnerable to climate change due to factors like high population density, poverty, and high reliance on climate-sensitive sectors ie Agriculture.

According to a 2019 report by the International Food Policy Research Institute, Bangladesh's rice output might decrease by 10% by 2050 compared to a scenario without climate change due to variables associated with climate change. The study predicted that by 2050, heat stress, floods, and other climate change-related catastrophes might decrease the nation's output of wheat by 30%, maize by 14%, and potatoes by 6%. In a subsequent assessment released in 2020, the United Nations Development Programme (UNDP) noted that Bangladesh's food systems have been significantly impacted by climate change, which has resulted in food poverty and malnutrition (Bloem et al. 2009). According to the research, food insecurity and malnutrition would grow nationwide due to climate change, with the poorest and most vulnerable populations suffering the most (UNDP 2020).

A study by Standard Chartered Bank identifies Bangladesh as one of the countries requiring substantial adaptation investments to address climate change risks. By investing $1.2 billion in adaptation by 2030, Bangladesh could prevent projected damages and loss of GDP growth of $11.6 billion, providing substantial returns.

Key aspects of climate-resilient food security and safety where we need to focus are

- **Aggressive Promotion of Climate-smart Agriculture** focuses on adapting farming practices to withstand and even benefit from a changing climate, ensuring food security and sustainable livelihoods, especially in vulnerable areas. This includes developing flood-tolerant rice, drought-resistant wheat, and salt-tolerant vegetables, as well as implementing practices like floating gardens and Sorjan system.
- **Water Management:** Implementing techniques like rainwater harvesting, drip irrigation, and mulching to conserve water and improve soil health, especially in drought-prone areas.
- **Soil health:** Focusing on organic farming practices, such as using compost and vermicompost, to improve soil fertility and moisture retention. Also, to ensure judicious application of fertilizers based on soil testing advisories.

- **Integrated Farming Systems:** Combining crop production with livestock and fisheries to enhance food security and income diversification. The diversification also adds nutritional security and efficient use of time of farmers and family members for income generation throughout the year.
- **Government and NGO support:** The government and various organizations support for technical assistance, training, and financial support to farmers to adopt climate-resilient practices will be effective.
- **Agrometeorological Extension services:** Providing farmers with timely and accurate information about weather patterns and potential risks, enabling them to make informed decisions. The department preparedness and continuous sensitization of all stakeholders should go hand in hand.
- **Diversification of food sources:** Relying on a variety of crops and food systems can help reduce vulnerability to climate-related disruptions. This needs the sensitization of mothers using gross root level extension professionals
- **Improved access to food:** Ensuring that vulnerable populations have access to adequate food and nutrition, especially during times of climate-related stress, is crucial. Establishment of food grain banks in prone areas with the partnership with local groups namely cooperatives, SHGs, FPOs is important step
- **Strengthening social safety nets:** Providing support to those who are most vulnerable to food insecurity, such as through food assistance programs or cash transfers, can help mitigate the impact of climate change. Strengthening the participation of local groups, institutions and digital final literacy can enhance efficiency
- **Investing in infrastructure:** Building resilient infrastructure, such as irrigation systems and storage facilities, logistics, especially digital infrastructure can help improve food security and reduce losses due to extreme weather events.
- **Promotion of Secondary Agriculture** focusing on food processing which can enhance nutrition, reduce waste, create employment and income to rural population and choice food to urban population.

Challenges:

- **Climate change impacts:** Extreme weather events which hardly can be controlled such as changing rainfall patterns, and rising temperatures can all disrupt food production and access. There may be too little advance indication for preparedness
- **Resource limitations:** Many developing countries lack the resources needed to implement climate-resilient strategies. Mainstreaming Climate resilience in all the ongoing programs is one way to address the resources

Moving Forward:

- **Mainstreaming Climate Resilient Agriculture** in all developmental programs cutting across disciplines would reduce the cost, time of implementation and also establish a sustainable system to address the issue of climate change
- **Sensitization of Farmers** on Climate Resilient Agriculture practices is critical as they are the producers. Capacity building of Extension functionaries, reducing Farmers to Extension Workers ratio by recruiting more extension functionaries, use of mass media especially social media in extension, taking cooperatives, FPOs and SHGs into confidence, active participation of Private sector through PPP would strengthen extension to reach all farmers.
- **Investing in Research and Development**: Continued research into climate-smart agricultural practices and technologies is essentially supported with timely extension. Vibrant Agri Startups may be actively involved in Food System Research and extension. Ongoing Research activities may be reoriented towards Climate Resilient Agriculture issues.
- **Strengthening partnerships:** Collaboration between governments, NGOs, the private sector, and local communities, especially the partners in value chains namely local traders, aggregators, wholesale dealers, cold storage and warehouse operators, retailers are crucial for building resilient food systems.
- **Incentivize Climate Resilient Agriculture promotors and programs** through additional government support
- **Promoting sustainable consumption:** Reducing food waste and adopting sustainable eating patterns can help reduce pressure on food systems.
- **Popularizing Eco-friendly farming enterprises** namely Bee Keeping, Millets, Bamboo, Plantation crops, Agri Tourism, solar farming and Agro Forestry may be expanded supported by branding and exporting.

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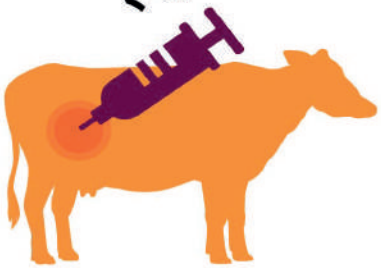

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MSD Animal Health

Abstracts Oral

Oral 01

Assessment of tilapia *(Oreochromis niloticus)* seed quality in pond and recirculatory aquaculture system in relation to climatic and water quality parameters

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ABSTRACT

The impact of climate change is increasing on global ecosystems, with rising temperatures and extreme weather events altering water quality in aquatic habitats. This study is intended to assess tilapia *(Oreochromis niloticus)* seed quality and to evaluate the impact of climatic factors and water quality parameters on the seed quality. The research was performed in the pond and Recirculatory Aquaculture System (RAS) by assessing growth metrics using growth comparison, length-based approach, morphometric study, etc., evaluating water quality impacts, and analyzing Growth Hormone-Releasing Hormone (GHRH) gene expression in both treatments across three batches. Larvae in the RAS showed a higher % length gain (2.94 ± 0.658 in Batch 2) compared to the pond system (1.191 ± 0.207). Specific Growth Rate (SGR) was also higher in RAS, peaking at 0.23 ± 0.032 %/day, while the pond system had 0.199 ± 0.025 %/day. Fulton's Condition Factor (K) was better in RAS (1.65) than in ponds (1.45). Morphometric analysis revealed significantly greater Standard Length (SL) and Caudal Length (CL) in RAS larvae ($p < 0.001$). PCA showed growth traits and water quality explained 66.96% variation in ponds and 63.09% in RAS but with different emphasis. Higher GHRH expression in RAS correlated with superior larval growth, highlighting its potential for enhanced growth. This study shows that seeds performed better in RAS than traditional methods where they are exposed to climate factors. As the climate is changing, sustainable practices like RAS can be a solution for ensuring resilient fish production in Bangladesh and beyond.

Keywords: Larvae, growth, seed quality, RAS, climate

Oral 02

Development of heat resistance mushroom variety through recombinant DNA technology

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ABSTRACT

Mushroom cultivation epitomizes circular agriculture by transforming low-value agricultural by-products into nutrient-rich food sources, providing minerals and proteins. In Bangladesh, it holds significant potential to combat poverty and improve the nutritional well-being of the population. Many young entrepreneurs are engaging in mushroom cultivation and changing their fates. However, a key challenge of mushroom cultivation in our country is climate. During summer, many varieties of mushrooms cannot grow due to heat. To address this problem, development of "Heat resistance" mushroom varieties is needed. In this study, we are trying to develop heat resistant mushroom variety through recombinant DNA technology, particularly *Agrobacterium tumefaciens*- mediated gene transfer (ATMT). The method includes Bioinformatic analysis for identifying potential heat resistance genes. The gene of interest is then transferred into the suitable vector (Agrobacterium). To analyse the result, Real- Time quantification PCR (qPCR) will be used to detect the expression of the heat resistance gene in the transformants. Furthermore, the findings will establish a new gene pool for mushroom breeding, leading to the development of an advanced mushroom breeding program in Bangladesh. Developing new varieties for the Bangladeshi climate will expand the mushroom market opportunities for growers and reduce reliance on imports, thereby saving foreign currency. This initiative will create a comprehensive molecular database of wild mushrooms. Additionally, our work will lay the groundwork for the national mushroom molecular library and contribute valuable genetic data to the International Mushroom Society. These outcomes will enhance global collaboration and understanding in mushroom research.

Keywords: Heat resistance mushroom, recombinant DNA technology, ATMT

Oral 03

Effect of different exogenous chemicals on morpho-physiology, yield and yield attributes of strawberry genotypes during high temperature in summer season

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ABSTRACT

Resilience and adaptation in agriculture are critical in today's world, when climate change is a threat to both environmental sustainability and food security. The cold-loving Strawberry genotypes hurdle to survive in the intense summer season. Therefore, the study was carried out to evaluate best chemical(s) lessening heat stress in summer season, and to know the growth and yield after summer season. The experiment was conducted following RCBD using three Strawberry genotypes and six treatments-Abscisic acid, Melatonin, $CaCl_2$, Kaolin, Molasses and water (control). The sprays were applied twice in a week from March-October, 2024. Morpho-physiological data such as plant height (cm), leaf size, leaf greenness (SPAD value), % LRWC, Chl-a, Chl-b and total chlorophyll content were varied among the treatments in comparison to control ($p<0.05$). After harvest, fruit size, fruit weight were recorded, along with biochemical compositions such as antioxidants, vitamins-B, vitamin-C, TSS and Titrable acidity. Kaolin-treated G3 plants exhibited the highest fruit weight (21.079 g), fruit length (4.2 cm), and fruit breadth (3.5 cm). Vitamin B1 and B2 were highest in Kaolin treated G1 (2.264 & 1.832 mg), while vitamin C was highest in G3 (12.758 mg). Total soluble solids were highest in G1 (8.5%) under kaolin, and titratable acidity was highest in G2 (0.9%) under $CaCl_2$ treatment. It may be concluded that Kaolin-treated G3 plants showed the best performance which offers an economic and effective means to reduce impact of heat stress, which is necessity for sustainable tropical strawberry farming in the face of climate change.

Keywords: Heat stress, strawberry, antioxidant defense, plant adaptations, food security

Oral 04

Development of bio-consortia for the management of bacterial wilt of brinjal

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ABSTRACT

Bacterial wilt caused by *Ralstonia solanacearum* is the devastating disease of Brinjal in Bangladesh. A consortia composed with native *Bacillus cereus*, *Trichoderma harzianum* and *Calotropis gigantea* was developed for the first time in Bangladesh. Twenty bacterial strains were isolated following serial dilution method. Among the strains, HSTUB 17 showed maximum zone of inhibition (1.5±0.1 cm) against *R. solanacearum* in the dual culture. 16 s rRNA partial coding sequence revealed HSTUB 17 as *B. cereus*. Soil drenching of consortia composed with *B. cereus* HSTUB 17, previously isolated *T. harzianum* and aqueous leaf extracts of *C. gigantea* found to reduce bacterial wilt incidence by 74.87, 66.67 and 66.67% at 30, 50 and 70 days after transplanting, respectively. The designed consortia also resulted maximum plant height (56.67 cm), number of branches/plants (10.33), and fruit yield (25.56 ton/ ha) in comparison with plants received only *R. solanacearum*. However, the single application of *B. cereus* HSTUB 17, T. harzianum and *C. gigantea* also minimized wilt incidence by 21.16−37.34, 33.33 and 21.48−28.14%, respectively. The developed consortia composed of *B. cereus* HSTUB 17, *T. harzianum* and *C. gigantea* demonstrated its potentiality for the eco-friendly management of bacterial wilt of Brinjal in field conditions.

Keywords: Brinjal, bacterial wilt, *Bacillus cereus*, bio-agents, consortia

Oral 05

Growing tomato under rooftop condition: Influence of planting pot, potting substrate and plant genotype on growth, yield and insect pests

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ABSTRACT

Rooftop agriculture offers a promising solution for enhancing urban food security by utilizing underutilized spaces for vegetable production. This study was conducted from December 2023 to March 2024 on the rooftop of the Agriculture Faculty building at Sylhet Agricultural University (SAU), Bangladesh, to optimize tomato cultivation under rooftop conditions. The experiment followed a Completely Randomized Design (CRD) with three replications and examined three factors: (i) tomato genotype (Hybrid tomato Raja F_1 and BARI Tomato-2 'Ratan'), (ii) pot type (cement and plastic), and (iii) potting substrate [S_1: Soil + Cowdung (2:1), S_2: Soil + Compost (2:1), S_3: Soil + Compost + Cocopeat (2:1:1), S_4: Soil + Cowdung + Cocopeat (2:1:1), and S_5: Soil + Cowdung + Compost + Cocopeat (2:0.7:0.7:0.7)]. The effects of these factors on plant growth, yield, and insect pest infestation were evaluated. Results showed that plant growth and yield were significantly higher in cement pots than in plastic pots. Among the genotypes, Hybrid tomato Raja F_1 outperformed BARI Tomato-2 in both growth and yield. The highest yield and lowest insect pest infestation, particularly from whiteflies and tomato leaf miners, were observed in plants grown in the S_2 substrate (Soil + Compost, 2:1). In conclusion, growing Hybrid tomato Raja F_1 in cement pots with a Soil: Compost (2:1) substrate is the most effective approach for maximizing yield while minimizing insect pest infestation under rooftop conditions.

Keywords: Urban agriculture, rooftop farming, vermicompost, tomato, vertical farming

Oral 06

A case study on ecofriendly fish farming by reducing the usage of antibiotics and disinfectants through probiotics and immune-boosting supplements at Kalaroa, Shatkhira

Mohammed Tarique Sarker[1], Md. Ariful Islam[1]*, Md. Asraful Islam[1]

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ABSTRACT

A study was conducted to evaluate the effects of probiotics, minerals, and immune-boosters on reducing the use of antibiotics and disinfectants while improving productivity and profitability in commercial fish farming ponds at Kalaroa, Shatkhira during 15th April to 14th December 2024. Five fish culture ponds (Treatment Ponds: T1, T2, T3, T4 and T5) were selected with an average area of 1.1 ha and depth of 1.6 m where VivaSoil (soil probiotics), Bluemix (minerals), Biozyme (digestive enzymes) and Sorpherol (vitamins & hepatic-protectant) were applied at recommended their dosages. In comparison, five different control ponds (C1, C2, C3, C4 and C5) of 1.2 ha with the same depth where no probiotics, minerals and immune-boosters were applied periodically. Feeding and management practices were maintained evenly among the ponds. *Ompok pabda* was the primary species stocked at 20 pcs/m^2 (800 pcs/decimal), alongside Silver carp, Catla, Rohu, and Mrigal at 0.175 pcs/m^2 (7 pcs/decimal). The Initial stocking weight of Pabda, Silver carp, Catla, Rohu and Mrigel were 0.20g, 900g, 1,000g, 900g and 750g, respectively. During June to September (total of 120 days), paddle wheel aerators (6 HP per ha) were used in each pond daily 10:00 PM to 6:00 AM for oxygenation. Weekly monitoring showed water temperature (20.4°C−34.5°C) remained consistent across treatments. Other parameters in treatment vs. control ponds were: transparency (23−30 cm vs. 25−32 cm), pH (7.5−8.5 vs. 7.3−8.2), dissolved oxygen (5.5−8.5 ppm vs. 5.0−7.5 ppm), alkalinity (120−170 ppm vs. 80−140 ppm), and total ammonia-nitrogen (0.00−0.25 ppm vs. 0.25−2.0 ppm). No antibiotics and disinfectants were applied in the treatment ponds because less disease proneness, whereas average 10 kg antibiotics (Erythromycin and Ciprofloxacin) and 20 liters of disinfectants (Benzal Konium Chloride i.e. BKC-80%) were applied in the control ponds during the culture period. After 165 days, Pabda in treatment ponds had an average body weight of 50.0±1.89 g and a survival rate of 85.0±1.87%, compared to 44.0±1.64 g and 81.0±2.45% in control ponds. Final weights of Silver carp, Catla, Rohu, and Mrigal were 6.0±0.35 kg, 5.1±0.32 kg, 3.4±0.24 kg, and 2.9±0.35 kg in treatment ponds, compared to 5.5±0.3 kg, 4.9±0.26 kg, 3.3±0.18 kg, and 3.0±0.17 kg in control ponds. Treatment ponds had higher survival rates (89.6±2.61% vs. 84.8±1.48%), weight gain (12.38±2.08 MT/ha vs. 10.31±1.04 MT/ha), and better feed conversion ratio (1.47±0.14 vs. 1.58±0.11) than control ponds. Gross sales and cost-benefit ratio were also higher in treatment ponds (BDT 4.63±0.23 million/ha, 1:1.52±0.05) than in control ponds (BDT 3.49±0.15 million/ha, 1:1.27±0.05). In accordance with promoting eco-friendly fish farming, the application of probiotics, minerals, and immune-boosters in Pabda-Carp culture significantly reduces antibiotic and disinfectant dependency while enhancing productivity and profitability.

Keywords: Probiotics, mineral, immune-booster, antibiotics & disinfectants, production & economics

Oral 07

Green analytical strategies for food safety: ATR-FTIR spectroscopy and chemometrics for detecting common food adulteration in Bangladesh

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ABSTRACT

Ensuring food safety in Bangladesh requires rapid, reliable and green detection methods for adulterants in common foodstuffs. Traditional analytical techniques are often time-consuming, costly, and involve hazardous chemicals. In this study, we propose a green analytical strategy utilizing attenuated total reflectance-fourier transform infrared (ATR-FTIR) spectroscopy coupled with chemometric techniques to detect and quantify food adulteration like milk, honey, ghee, black pepper, turmeric and edible oils. We analyzed these food samples to identify specific spectral regions of adulterants such as palm oil in milk, ghee and edible oils, sugar syrup in honey, rice husk in turmeric, and papaya seeds in black pepper. For method development, pure samples were adulterated with adulterants in various concentrations and analyzed using ATR-FTIR over the 4000 to 400 cm^{-1} range. The different spectral ranges were able to successfully quantify and differentiate between pure and adulterated food samples, using orthogonal partial least squares (OPLS) for quantification and orthogonal partial least squares discriminant analysis (OPLS-DA) for classification. The prepared OPLS-DA models normally showed 95% to 100% correct classification rate. The ideal OPLS calibration model showed excellent results (R^2Y= 0.950 to 0.999, Q^2 = 0.950 to 0.999), with minimal errors. Finally, these green methods offer a sustainable, rapid, and cost-effective solution for routine food quality assessment.

Keywords: Bangladesh, food adulteration, green method, ATR-FTIR, chemometrics

Oral 08

Development of multi epitope subunit vaccines against emerging carp viruses cyprinid herpesvirus 1 and 3 using immunoinformatics approach

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ABSTRACT

Cyprinid Herpesvirus is a major causal agent of fatal disease in common and koi carp. Since its emergence in the late 1990s, this highly contagious pathogen has caused severe financial losses worldwide. In common carp, Cyprinid herpesvirus 3 has a mortality rate of 90%. Among the different strains of Cyprinid Herpesvirus, Cyprinid Herpesvirus 1 (CyHV-1) & Cyprinid Herpesvirus 3 (CyHV-3) has showed a highly pathogenic effect in countries namely Europe, Asia and Africa. But there is no effective vaccine available at present. So, using a reverse vaccinology approach, a study was conducted to develop a unique multi epitope subunit vaccine against CyHV-1 and CyHV-3. After conducting proper literature review most vital proteins were selected and allowed for further *in silico* study to predict highly antigenic epitopes through antigenicity, transmembrane topology screening, allergenicity assessment, toxicity analysis and molecular docking approach. Then multi-epitope-based vaccine was constructed combining with a suitable adjuvant and appropriate linkers. It was found to be safe and immunogenic. Suitable tertiary structure of the vaccine protein was generated, refined and validated. Finally, molecular docking studies were performed to ensure a favorable binding affinity between the vaccine construct and TLR3 receptor. This *in-silico* development of CyHV vaccine with multiple epitopes could open the path for future rapid laboratory tests. However further in vivo trial is highly recommended.

Features	Assessment
Antigenicity	1.0807 (Probable ANTIGEN).
Allergenicity	Probable non-allergen (AllerTOP v.2.0) Probable non-allergen (AllergenFP v.1.0)
Solubility	0.598
Number of amino acids	277
Theoretical Isoelectric point (pI)	8.87
Instability index	27.37 (Stable)
GRAVY	-0.399

Table: Primary feature assessment of multi-epitope-based vaccine construct

Keywords: Multi-epitope, vaccine, reverse vaccinology approach

Oral 09

Prevalence, antimicrobial resistance and ARG profiling of colistin-resistant *E. coli* and *Klebsiella* isolates from street food samples in Bangladesh

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ABSTRACT

The objective of this study was to determine the prevalence of ESBL-producing and colistin-resistant *Escherichia coli* and *Klebsiella* spp. in street-vended foods (SVFs) in Sylhet, Bangladesh, and to assess their antibiotic susceptibility patterns, including the detection of associated antibiotic resistance genes (ARGs).Total of 150 SVF samples were randomly collected, consisting of chatpati (n=35), phuchka (n=45), bhelpuri (n=25), salad (n=25), and chola (n=20). Isolation and biochemical identification of *E. coli* (n=75) and *Klebsiella* spp. (n=25) were performed using the IMViC test. Twelve ESBL-producing colistin-resistant isolates were further confirmed through molecular identification by sequencing 16S rDNA. Colistin susceptibility was determined by minimum inhibitory concentration (MIC) using the colistin broth disk elution test and broth microdilution method. Antibiotic susceptibility of the colistin-resistant isolates was assessed using the Kirby-Bauer disk diffusion technique. ESBL production was confirmed through Phenotypic Confirmatory Disk Diffusion Test (PCDDT) and Double Disc Synergy Test (DDST). The presence of ARGs, including mcr genes and ESBL genes (blaCTX, blaNDM, blaTEM, and blaOXA-48), was detected using PCR. Among the isolates, 35 *E. coli* (46.67%) and 9 *Klebsiella* spp. (36%) were found to be colistin-resistant with MIC values ≥4 µg/ml. Out of these, 25 isolates (56.82%) exhibited resistance to at least one third- or fourth-generation cephalosporin (cefepime, ceftriaxone, ceftazidime). All colistin-resistant isolates demonstrated multidrug resistance (MDR) with a Multiple Antibiotic Resistance (MAR) index ≥2. ESBL production was confirmed in 8 *E. coli* (22.86%) and 4 *Klebsiella* isolates (44.44%). The mcr-1 gene was detected in 4 *E. coli* (50%) and 1 *Klebsiella* (25%) isolate, while the mcr-2 gene was present in 5 *E. coli* (62.5%) and 2 *Klebsiella* (50%) isolates. No isolates carried the mcr-3 gene. Notably, mcr-1 and mcr-2 positive isolates were found to harbor two or more ESBL genes (blaCTX, blaNDM, blaTEM, and blaOXA-48) The study highlights the alarming presence of multidrug-resistant, colistin-resistant, and ESBL-producing *E. coli* and *Klebsiella* spp. in street-vended foods in Sylhet, Bangladesh. The co-occurrence of mcr genes and multiple ESBL genes in these isolates suggests a potential public health threat. These findings emphasize the need for stricter monitoring and regulatory measures to ensure the microbial safety of street-vended foods in Bangladesh.

Keywords: Colistin resistance, mcr-genes, ESBL, *E. coli*, *Klebsiella*, street food

Oral 10

In silico identification and characterization of novel drug targets in *Treponema denticola* (Strain ATCC 35405/DSM 14222/CIP 103919/JCM 8153/ KCTC 15104): A subtractive genomics approach

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ABSTRACT

Treponema denticola is a gram-negative, highly drug-resistant bacterium found in primary dentition infections and around teeth. It causes inflammation and tissue homeostasis which is linked to periodontal diseases like early-onset periodontitis, necrotizing ulcerative gingivitis, and acute pericoronitis. Research is needed to develop powerful, cost-effective, secure, and environmentally friendly antibiotics and techniques to control and manage infections caused by this bacterium. This study exploits the sophisticated in silico subtractive genomics approach to investigate potential therapeutic targets that are exclusive to the pathogen *T. denticola.* Our study identified 126 proteins of the bacterium that had no resemblance to the human genome and 12 bacterial proteins which were indispensable to the pathogen. Furthermore, metabolic pathway analysis of the non-homologous proteins revealed 11 *T. denticola* enzymes that can be targeted for drug development. Based on sub-cellular localization prediction, all selected proteins were cytoplasmic proteins, and virulent protein predictions revealed no virulent proteins among the selected proteins. The study further revealed the protein-protein interactions of these eleven essential proteins, and successfully anticipated, assessed, and verified the three-dimensional structures of these proteins. In this study, the selected proteins of *T. denticola* are potential targets for the development of novel drugs. Therefore, undertaking a screening process with a view to detect functional inhibitors for these newly revealed drug targets may lead to the discovery of novel therapeutic drugs that can effectively combat *Treponema denticola* related risks and infections.

Keywords: *Treponema denticola*, subtractive genomics, immunoinformatics, drug target

Oral 11

Molecular characterization of antimicrobial resistance and virulence genes in *E. coli* from backyard poultry and humans in rural Bangladesh: Zoonotic transmission potential

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ABSTRACT

Backyard poultry farming is a common practice in rural Bangladesh providing both nutrition and income. However, its role as a potential reservoir and transmission source of *E. coli* carrying antimicrobial resistance (AMR) and virulence genes remains unexplored. This study aims to characterize the *E. coli* isolated from the backyard poultry and humans with a recent history of diarrhea or watery stools from the same household to assess their antibiogram and zoonotic potential. A total of 45 pairs (90) of poultry and human fecal samples were collected from the Gazipur district of Bangladesh. Standard microbiological techniques and molecular methods (PCR) were performed to confirm the *E. coli*. PCR was also used to assess the AMR and virulence genes. Disk diffusion method was used to determine the AMR patterns. Overall, 91.11% (Poultry:93.33% and Human:88.88%) isolates were confirmed as *E. coli*. Tetracycline and Trimethoprim showed the highest resistance (62.5%) while Doxycycline (87.5%) and Nitrofurantoin (83.75%) showed the highest susceptibility. Additionally, 65% of samples were multidrug-resistant (MDR) and 18.75% of samples showed MAR> 0.5. The prevalence of the AMR genes included *bla*TEM (60%), *bla*CTXM (18.75%), *tet*A (56.25%), and *qnr*S (82.25%). Similarly, the prevalence of virulence genes included *stx*1 (27.5%), *fim*H (95%), *hly*F (31.25%), and *eae*A (12.5%). Statistical analyses indicated potential zoonotic transmission of these virulence genes. The findings of our study highlighted a high prevalence of *E. coli* containing AMR and virulence genes in backyard poultry settings in rural areas of Bangladesh and also indicated a high AMR, MDR, and potential zoonotic transmission.

Keywords: Backyard Poultry, *E. coli*, AMR, virulence gene, zoonotic potential

Oral 12

Multidrug resistant and ESBL producing *Salmonella* spp. isolated from duck and quail at Dinajpur district

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ABSTRACT

Salmonella is a major foodborne pathogen with significant public health implications, which may enter to the food chain from ducks and quails. *Salmonella* infection, particularly in ducks and quails causes economic losses in those species, attracted the interest of researchers, as ducks are a primary reservoir of *Salmonella* transmissible to humans. This study aimed to identify and characterize circulating *Salmonella* strains in ducks and quails from live bird markets in Dinajpur Sadar and to assess their antimicrobial susceptibility profile. A total of 90 cloacal and fecal samples (60 from ducks and 30 from quails) were collected from apparently healthy birds in retail markets. *Salmonella* was detected in 26% of duck samples and 20% of quail samples, with an overall occurrence of 24.44% (22/90). Molecular confirmation of the *Salmonella* isolates was carried out by PCR amplification of the invA gene, resulting in a 284 bp product, verifying the isolates as pathogenic *Salmonella* spp. Antimicrobial susceptibility testing was conducted using the Kirby-Bauer disk diffusion method on Mueller-Hinton agar with various antibiotic discs. The isolates from both ducks and quails demonstrated 100% resistance to Ampicillin, Chloramphenicol, Ciprofloxacin, Doxycycline, Levofloxacin,Tetracycline, Cefuroxime, Cefalexin, Streptomycin, and Gentamicin and sensitive to Co-trimoxazole and Erythromycin. The presence of the *bla*TEM resistance gene was confirmed through PCR, producing a 643 bp amplicon. The presence of *bla*TEM gene indicate the extended spectrum beta-lactamase (ESBL) producing nature of the isolated *Salmonella* spp. In conclusion, the study highlights the presence of multidrug-resistant (MDR) *Salmonella* in duck and quail of live bird market, posing a potential risk for human health. The detection of resistance genes in these isolates emphasizes the need for attention to antimicrobial resistance patterns in foodborne pathogens to ensure consumer safety.

Keyword: *Salmonella*, multidrug-resistance, ducks and quails, live birdmarkets, PCR

Oral 13

Isolation and detection of multidrug-resistant bacteria from mud crabs (*Scylla serrata*) of coastal regions in Bangladesh

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ABSTRACT

The present study was undertaken to isolate and identify different bacterial species from commercially important mud crabs in the coastal regions of Bangladesh with special emphasis on antibiotic resistance. A total of 100 crabs were collected from natural aquatic sources of Chattogram, Cox's Bazar, Khulna, and Satkhira districts. Multiple bacteria were isolated by culture and staining characteristics, followed by confirmation and differentiation of the isolates by PCR using specific primers.A total of 185 culture-positive isolates were isolated from 100 wild mud crabs, and *Escherichia coli*, *Salmonella* spp., *Vibrio cholera*, *Aeromonas* spp., and *Staphylococcus* spp. were detected by PCR with the isolation rate of 26%, 1%, 2%, 29% and 42%, respectively. Only 7 *E. coli* isolates were found to contain the *ChuA* gene. Similarly, two isolates were detected as *V. cholera* out of 29 *Aeromonas* spp. Sixteen were confirmed as *A. hydrophilia*, and six were as *A. veronii*; 32 out of 42 *Staphylococcus* spp. was *S. aureus*. Higher resistance of *E. coli* isolates was observed against seven antibiotics (amoxicillin, ampicillin, cefuroxime, cephalexin, cefotaxime, erythromycin, and tetracycline); *Salmonella* against five antibiotics (cefuroxime, cephalexin, ampicillin, amoxicillin, and cefotaxime); *V. cholerae* against six antibiotics (ampicillin, amoxicillin, cefuroxime, cefotaxime, erythromycin, and tetracycline); *Aeromonas* spp. against 15 antibiotics; and *S. aureus* against 16 antibiotics. All *Staphylococcus* spp. isolates were found to be 100% resistant to penicillin and 80-90% resistant to amoxicillin, ampicillin, amikacin, and gentamycin. Wild mud crabs may harbor and transmit multidrug-resistant pathogenic bacteria to humans, which may cause life-threatening illnesses.

Keywords: Antibiogram, pathogenic, multidrug resistance, mud crab, coastal region

Oral 14

Detection of multidrug-resistant bacteria from milk of suspected cows suffering from subclinical mastitis

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ABSTRACT

The study aimed to isolate and identify the multidrug-resistant (MDR) bacteria from cow milk suspected to subclinical mastitis critical for both animal and public health. Twenty-five milk samples from 25 mastitis suspected cows detected by Ekomilk Horizon containing high somatic cell count (>200000) were collected from Sirajganj and Rajshahi districts. Each sample was inoculated in nutrient broth, followed by streaking on EMB, MS, KF Streptococcal, and plate count agar media for the isolation of Escherichia coli, *Staphylococcus aureus*, *Streptococcus* spp., and *Pseudomonas aeruginosa*, respectively. Genomic DNA was extracted by the boiling method, and each species was confirmed by PCR. Eight antibiotics of six classes were used for antibiotic sensitivity test of PCR-positive isolates by the disc diffusion method. *E. coli*, *S. aureus*, *Streptococcus* spp., and *P. aeruginosa* were detected in the milk samples with isolation rates of 100% (25), 44% (11), 80% (20), and 72% (18), respectively. Most of the *E. coli* isolates were found resistant to ampicillin, amoxicillin, streptomycin, ceftriaxone, and oxytetracycline. *S. aureus* showed resistance to ampicillin, amoxicillin, gentamicin, penicillin, ceftriaxone, and oxytetracycline, whereas *Streptococcus* spp. was found resistant to amoxicillin, ceftriaxone, gentamicin and penicillin. *P. aeruginosa* also showed resistance to multiple antibiotics. It can be concluded that MDR bacteria isolated from subclinical mastitis can be threat for the dairy industry which also poses a significant public health issue.

Keywords: Subclinical mastitis, MDR, SSC, Ekomilk Horizon, EMB

Oral 15

An investigation regarding the impact of casing materials on the antioxidant, antimicrobial, properties of *Calocybe indica*

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ABSTRACT

The samples spent mushroom substrate (SMS) and loamy soil (LS)were further dried using a hot air oven at 40−45 °C for two days before being ground in a mortar and pestle. Additionally, the samples were subjected to methanol extraction prior to assessing the qualitative presence of the phytochemicals. The total content of phenolic and flavonoids present in the extracts was determined using the Folin-Ciocalteu and colorimetric methods with aluminum chloride, respectively. Furthermore, ascorbic acid and quercetin were used as standard reference antioxidants while 1,1-diphenyl-2-picrylhydrazyl (DPPH) assay was used for comparative analysis. Methanol extract from the *C.indica* mushroom has been examined for antimicrobial effect against five gram negative bacteria isolates using agar well diffusion method. According to the DPPH assay, the ascorbic acid, which served as a standard, exhibited the most potent antioxidant activity, obtaining an IC50 value of 21.76±0.12 µg/mL. On the other hand, mushroom extracts from SMS and LS had low levels of antioxidant activity with respect to the standard and did not vary greatly ($P \leq 0.05$). The finding illustrates the total phenolic contents of *C. indica* in SMS at 81 ± 0.63 mg GAE/g and LS at 23.38 ± 1.19 mg GAE/g. The total flavonoid content on the other hand was recorded at in SMS 53.21 ± 1.03 mg QE/g and LS 55.60 ± 4.17 mg QE/g. The 'P' value which is lesser or equal to '0.05' shows the difference in both the extracts in terms of phenolic and flavonoid compounds is not significant. The potential methanolic extract of *C. indica* showed some antifungal activities against the *E. coli* an organism that is mainly associated with urinary tract infections which is a gram negative bacteria. But no antimicrobial activities were exhibited against the other gram negative bacterial isolates. The findings indicate that *C. indica* extracts that have been grown in SMS and LS can be considered to be a plausible option to be utilized as natural antioxidant and antibacterial agents for medicinal reasons.

Keywords: *C. indica*, SMS (Spent Mushroom Substrate), LS (Loamy soil), antioxidant, antimicrobial

Oral 16

Assessment of quality and safety attributes of fresh, chilled and frozen broiler meat sold in different retail markets at Dhaka city, Bangladesh

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ABSTRACT

Broiler meat is an important source of high-value protein; however, processing practices, handling and marketing systems greatly affect the quality and safety standard. Thus, the present study evaluates the quality and safety parameters of broilers collected from different market sources, focusing on physical attributes, nutritional composition, microbial safety and sensory qualities. A representative sample of broiler meat was collected from fresh, chilled, and frozen broilers from different marketplaces in Dhaka city. Results indicated that fresh broiler had greater breast weight (48.85 ± 18.44%); thigh weight (20.35± 5.07%) and back weight (24.12 ± 7.21%) per cent but reduced drumstic weight (10.79 ± 1.30%) and wings weight (8.3 ± 0.64%) compared to chilled and frozen broiler ($P<0.05$). Besides, fresh broiler meat showed higher cooking yield (86.40± 4.59%) but lower pH value (6.1± 0.35), drip loss (3.18a ± 0.16%) and cooking loss (13.59a ± 4.59%) per cent than other categories ($P<0.05$). However, no significant difference was found in water holding capacity (WHC) and marinade retention per cent in all categories. Proximate analysis highlighted the non-significant difference in every parameter among the categories. Microbiological study revealed that the Total viable count (TVC) ranges from 5.22 to 6.01 log10 CFU/g and Total coliform count (TCC) ranges from 4.79 to 5.42 log10 CFU/g in meat samples, which were below the permissible limit. Sensory evaluation found that consumers preferred fresh broiler because of its flavour and juiciness. This study concludes that fresh broiler exhibits greater meat quality when all quality and safety evaluations are taken into account.

Keywords: Broiler, meat quality, microbial safety, retail market, sensory analysis

Oral 17

Study on effects of sanitized and unsanitized eggs marketing on public health in Bangladesh

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ABSTRACT

Market eggs may contaminate with microbial, especially from the dirt on their shell surface. The aim of this study is to assess the viability of *Staphylococcus aureus*, a pathogen poses significant health and food safety hazards. A cross-sectional study has conducted to assess the physicochemical and microbial quality of eggs from 10 commercial layer farms, 10 retail shops, and 10 supermarkets under fresh, sanitized, and unsanitized conditions. A total of 300 eggs were collected, with 100 from each source. *Staphylococcus aureus* isolated and confirmed by routine microbiological technique, antibiotic susceptibility was tested through disc diffusion method. Additionally, PCR was employed to detect resistance genes (mecA, blaTEM, tetA, vanA, vanC) and the enterotoxin gene (seb). *S. aureus* was found in 59% of fresh egg at farm level samples, 52% of unsanitized egg sample from retail shop and 10% of sanitized egg collected from super shop. Molecular analysis revealed that 46.55% isolates from farm level, 40.38% isolates from retail level and 20% isolates from super shop level were positive for the nucgene. High resistance rates were observed to cephalosporins, β-lactams, and lincosamides, with notable sensitivity to fluoroquinolones. Correlation analysis showed significant associations between resistance patterns and antibiotic efficiency. Multidrug resistance in fresh egg isolates was 60.41% at farm of unsanitized and 66.66% of sanitized isolates classified as multidrug-resistant. The study reveals the presence of high levels of MDR *S. aureus* in unsanitized market eggs of Bangladesh. So, only sanitary measure is crucial to reduce the risk of antibiotic-resistant of table eggs and for ensure consumer safety.

Keywords: *Staphylococcus aureus*, antibiotic resistance, molecular analysis, multidrug resistance

Oral 18

Health benefits and market potential of honey-sweetened cold coco coffee: An analysis of consumer preferences and glycemic impact in Bangladesh

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ABSTRACT

Excessive consumption of sugar-sweetened beverages (SSBs) increases the risk of obesity, metabolic disorders, and coronary heart disease (CHD) (Calcaterra et al., 2023). A meta-analysis revealed individuals consuming high levels of SSBs had a 17% greater risk of CHD, with an additional 16% increase per serving per day. SSBs are responsible for 2.2 million new type 2 diabetes cases globally in 2020 (Lara-Castor et al., 2025). Given these health risks, this study aimed to assess consumer awareness and perception of honey-based Coco-coffee as a functional alternative to SSBs and examine willingness to switch. There is an urgent need for functional beverage alternatives that reduce sugar intake while maintaining consumer appeal (Dorothy et al., 2020). Honey-based coffee offers a lower GI, antioxidant and antimicrobial properties, potentially improving glycemic control and metabolic health (Manyi-Loh, Clarke, & Ndip, 2010). Over 4-5 months, product development and consumer testing were conducted to ensure taste, stability, and market viability. A structured online survey of 300 participants (students and professionals) was conducted using multiple-choice and Likert scale questions to assess SSB consumption habits, health perceptions, and willingness to adopt honey-based coffee. 81% of respondents indicated willingness to switch to a natural, low-GI beverage, while 79% expressed interest in purchasing Coco-Coffee if commercially available.Coco-Coffee aligns with the growing demand for nutrient-rich, functional foods. This study highlights the potential of honey-based beverages to reduce glycemic load, lower diabetes risk, and promote sustainable beekeeping practices that contribute to biodiversity and climate-resilient food production.Further research will focus on nutritional analysis of Coco-Coffee's glycemic impact, consumer acceptability trials, and climate-resilient aspects.

Keywords: Functional beverage, honey, healthier coffee, sugar-free alternative, type 2 diabetes prevention, coronary heart disease prevention, sustainable nutrition, beekeeping practice

Oral 19

Comparative assessment of broiler meat quality at different slaughter weights in retail markets

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ABSTRACT

The broiler is a common source of protein while its meat quality may vary due to the different live weights of the birds. The current research aimed to decide on the optimal broiler size for consumers based on carcass characteristics, physical properties, and nutritional profiles. Furthermore, health-hazardous microbial loads and sensory evaluation of broiler meat were determined. In this study, broiler weight was categorized into three groups: 1.0-1.5 kg, 1.5-2.0 kg, and 2.0-2.5 kg. Several parameters, such as the weight of each part of the broiler, drip loss, pH, water holding capacity, cooking loss, marinade retention, moisture, dry matter, crude protein, ether extract, and total ash were measured. Results indicated that all of the carcass characteristics, such as the weight of breast, drumstick, thigh, wings and dressing percentage differed significantly among the three weight groups. The 2.0−2.5 kg group achieved the highest dressing percentage (72.42%), eviscerated weight (1.91±0.10kg), breast yield (596.58±67.44g), water-holding capacity (23.81%), and cooking yield (84.70%). On the other hand, the physical and nutritional properties showed non-significant differences among the groups. In sensory evaluation, broilers weighing between 2.0-2.5 kg were preferred more than the alternative options. Microbiological study showed that the total viable count and the total coliform count range from 5.54 to 5.89 CFU/g and 4.56 to 4.95 CFU/g in all categories, respectively. Therefore, it can be stated that a broiler weighing between 2.0-2.5 kg would be economically favorable.

Keywords: Broiler, carcass characteristics, physical properties, nutritional profiles, sensory evaluation

Oral 20

Current trends of chicken processing in different wet marketplaces of Dhaka city: A food safety and public health concern

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ABSTRACT

The aim of the study was to identify the methods used by various meat-selling establishments in Dhaka city for processing meat as well as the microbial contamination of meat throughout this process. A standardized questionnaire was created for a survey that was conducted in 27 butcher shops across Dhaka's several wet marketplaces. Samples of raw chicken breast muscle were taken in order to calculate the microbial count. Results showed that various types of live chickens were sold in the wet market. The hygienic facilities at the market for processing birds were inadequate. Customers did not receive any live birds from the market, despite the fact that a variety of poultry live birds were available there. 90% of customers preferred skinless processed chicken, while only 10% purchased dressed chicken. According to microbial analysis, the Total Coliform Count (TCC) ranges from 2.69 to 3.37 $\log_{10}$ CFU/ml, while the Total Viable Count (TVC) ranges from 3.73 to 4.61 $\log_{10}$ CFU/ml. The bacterial count indicates the permitted limits, however, their presence in meat raises questions regarding food safety. Therefore, it may be concluded that consumers of chicken meat in Dhaka are at risk for public health due to unhygienic processing practices of chicken in the wet markets.

Keywords: Chicken meat, chicken processing, food safety, microbes, wet market

Oral 21

Tuberculosis in captive deer, slaughtered cattle and goats; Insights into tuberculosis of food animals and their public health concern

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ABSTRACT

Tuberculosis (TB) is a global zoonosis at wildlife-livestock-human interface. This study identified tuberculous infectivity in deer (n=15), cattle (n=1856) and goats (n=200) in various regions of Bangladesh during 2010 to 2024 by using intradermal tuberculin tests, pathology and polymerase chain reaction (PCR) techniques. Cattle (n=656) and goats (n=200) destined for slaughtered were sampled for the detection of tuberculosis. A total of 2356 cattle were tested using tuberculin test; 61 cattle mount dermal swelling with bovine PPD and one with avian PPD. Sample collected from slaughtered cattle (n=250), tuberculin test positive cattle (n=19), slaughtered goats (n=200), and deer (n=38) subjected to impression smears staining showed acid fast bacilli in 10 slaughtered cattle, 19 tuberculin test positive cattle, 01 goats, and 11 deer. Histopathological examination of the tissue sections showed granulomas in 29 cattle, 11 deer and 01 goats. Using PCR, mycobacterium genus specific amplicons (1030bp) were detected in 29 cattle, 11 dear and 01 goats and MTBC specific 372bp amplicons (16S rRNA) in 27 cattle, 09 dear and 01 goats. Using uniplex PCR (600bp amplicon, MPB83 gene) *M. bovis* was detected in 25 cattle, 06 deer, and in a goat and *M. tuberculosis* (667bp, H37Rv gene) in 02 cattle and 02 deer. Para TB (*M. avium subsp var paratuberculosis*, 16Sr RNA gene, 180bp) was detected in a cow and in two deer. All the three potential zoonotic mycobacterial species were identified in food animals, insolence a hidden menace of tuberculosis; how and where to address food safety and public health issues?

Keywords: Tuberculosis, tuberculin test, pathology, PCR, zoonosis

সবার জন্য নিরাপদ পোল্ট্রির মাংস ও ডিম সরবরাহের প্রত্যাশায়



প্রকল্পের উদ্দেশ্যেঃ

- পোল্ট্রির বিভিন্ন প্রজাতি সমূহ সংগ্রহ, সংরক্ষণ, জাত উন্নয়ন এবং অধিক মাংস ও ডিম উৎপাদনশীল স্ট্রেইন উদ্ভাবন।
- বাংলাদেশ প্রাণিসম্পদ গবেষণা ইনস্টিটিউট কর্তৃক উদ্ভাবিত পোল্ট্রি প্রযুক্তিগুলোর ভেলিডেশন, সংস্কারকরণ এবং প্রয়োজনীয় প্রযুক্তি উদ্ভাবন।
- অপ্রচলিত ও বিদ্যমান পোল্ট্রি খাদ্য উৎপাদন সমূহের পুষ্টিগত মান নিরুপন এবং গবেষণার মাধ্যমে সাশ্রয়ী মূল্যে পোল্ট্রির মাংস ও ডিমের প্রক্রিয়াজাতকরণ ও ভ্যালু এডিশন।
- পোল্ট্রি বিষক বিভিন্ন ক্ষেত্রে গবেষণা কার্যক্রম গ্রহণের মাধ্যমে নিরাপদ মাংস ও ডিমের উৎপাদন বৃদ্ধি।
- পোল্ট্রি খামারীদের প্রযুক্তিগত সহযোগিতা প্রদান ও আর্থ সামাজিক উন্নয়ন।
- বিএলআরাই এর পোল্ট্রি বিষয়ক গবেষণা কার্যক্রমের গূনগত মান বৃদ্ধির লক্ষে দেশি-বিদেশি বিভিন্ন বিশ্ববিদ্যালয় ও গবেষণা প্রতিষ্ঠান/ল্যাবের সহিত সম্মন্নিতভাবে গবেষণা কার্যক্রমের পরিচালনার সুযোগ সৃষ্টি।

বাস্তবায়নে পোল্ট্রি রিসার্চ সেন্টার, বিএলআরআই, সাভার, ঢাকা।

অর্থায়নেঃ পোল্ট্রি গবেষণা ও উন্নয়ন জোরদারকরণ (১ম সংশোধিত) প্রকল্প

বাংলাদেশ প্রাণিসম্পদ গবেষণা ইনস্টিটিউট

সাভার, ঢাকা ১৩৪১

7th International Scientific Conference on Food Safety and Health

Theme: Climate Resilient Food Security and Safety

LIST OF POSTERS

Venue: Auditorium, BARC, Farmgate, Dhaka-1215

Date and Time: 10th May 2025, Saturday, 12:05 to 13.00

Code	Title and Authors

Category 1: Safe Food Production and Processing

P-01 **Using tannery wastes in poultry feed: A matter of concern for safe poultry production in Bangladesh**
Md. Saiful Islam, Ankur Sarker Protik, Mst. Arefatul Zannat, Zannatul Naim, Md. Enayet Kabir, Md. Asaduzzaman, Mofassara Akter

P-02 **Effect of supplemental irrigation and manuring on performance of BRRI dhan103 under terminal drought condition in Aman season**
Md. Abu Hasan, Md. Taufiqur Rahman, Md. Hafizur Rahman Hafiz, Md. Rabiul Islam, Seuli Sharmin

P-03 **Investigation of residual patulin in beef and chicken meat and liver samples using HPLC-PDA**
Nargis Parvin, Mohammad Shoeb

P-04 **Assessment of commercially packaged fluid milk and powdered milk quality available in Dhaka city: A food safety concern**
Abdur Rahman, Miss-K. Jahan Mim, Mofassara Akter, Md. Saiful Islam, Lita Biswas, Mst. Tasmim Sultana, Md. Asaduzzaman

P-05 **Integrated farming system: An effective tactic for maintaining global food security in a changing climate**
Avizith Kumar Das, Mehedi Hasan Shakil

P-06 **Determinants of the impact of adoption of climate-smart agriculture technologies for sustainable food security in the hoar region of Sunamganj**
Tanmay Datta, Farah Hossain Jury, Md Mizanur Rahman Sarker

P-07 **The productivity and challenges of buffalo in Bangladesh**
Md. Arafat Jaman, Emon Ahamed, Md. Roisul Momen, Tahera Yeasmin

P-08 **Unveiling the causes of mortality of native chickens in Bangladesh: A cross-sectional analysis**
M.H.M. Muzakkir, Md. Mehedi Hasan, Prantor Kormokar, Syed Sarwar Jahan, Md. Shariful Islam

P-09 **Impact of climate change on shrimp farming in south-western part of Bangladesh**
Rakhi Sana, Md. Nahim Hossain, Md. Sazedul Hoque

P-10 **From popularity to productivity: The indispensable role of research in advancing rooftop farming in Bangladesh**
Chandra Kanta Dash, Nahian Nizia, Sharif Maheria, Noor Mohammad Oyes Korone, Ishraq Al Ifaz, Amit Das, Md. Mahmudul Hasan, Dewan Hasan Al Mostakim

P-11 **Evaluation of milkers' attitudes, knowledge, and practices in the dairy farms in and around Mymensingh city**
M. Galib Morsheed, Tasnim Zarin, FNU Nahiduzzaman, Arnob Saha, Md. Ariful Islam, Mst Minara Khatun

P-12 **Improving cookie quality with germinated chia seed (*Salvia hispanica L.*) flour: A sustainable bioprocessing approach**
Tanjim Ahmed, Md. Rakibul Islam, Md. Akhtaruzzaman

P-13 **Effects of rhizobium inoculum on French bean nodulation with its isolation, characterization and identification in acid soils**
Md. Abul Kashem, Khadeza Yasmin, Israt Jahan, Md. Imran Khan, Saima Sadia Jui

P-14 **Salinity negatively correlates with the production and immunity of chicken: A molecular insight for food security and safety issues**
Subrato Biswas, Md Abdul Masum, Sujan Kumar Sarkar, Basant Saud

P-15 **Comparative study of liver pathology in different species of animals in Mymensingh**
Mohammad Shelim Ahmed, Zubaida Gulshanara, Tasnia Anjum Etu, Md. Abu Hadi Noor Ali Khan, Munmun Pervin

P-16 **Extraction method development and quality assessment of *Piper betle L.* leaves essential oil from Bangladesh**
Md. Kamrul Hasan, Naim Islam, Md. Shahriar Rahman, Zakir Hossain, Jahangir Alam, Manobendra Nath Mohanta, Sunjida Akhter, Ahmed Imtiaz Rais, Md. Atikul Islam

P-17 **Up-scaling Trichohderma-based bio-fungicide for the bio-rational management of wilt (*Fusariumo oxysporum*) of tomato**
Md. Shariful Islam, Md Mujahid-E-Rahman, Md. Mohidul Hasan

P-18 **Development of mushroom variety through protoplast fusion**
Sharita Islam, Jebunnahar Khandakar

P-19 **Technology in food and nutrition security: A hope for greener light**
Md. Foysal, Mehedi Hasan, Murad Hossain, Mst. Salma Khatun

P-20 **Green nanotechnology for food security: A sustainable strategy for prolonging bell pepper shelf life**
Mir Meahadi Hasan, Mahfujul Alam, Asraful Alam, Mohammad Mainuddin Molla

P-21 **A research on challenges for health care services in upazila health complex: A study on three chars in Kamalnagar, Lakhsmipur**
Fozle Rabbi Forhad, Shamima Akhter

P-22 **Influence of seasonal variations, testosterone levels, and micronutrient supplementation on scrotal circumference and semen quality in rams**
Md Abu Saif, Showkat Hossaen, Farida Yeasmin Bari, Amit Saha

Category 2: Food Safety and Microbiology

P-23 **Detection of antimicrobial-resistant bacterial pathogens from houseflies in different locations of Dhaka city**
Tahmina Sikder, Tasmiah Tarin, Md. Jisan Ahmed, Basant Saud, Md. Imran Hossain, Prajwal Bhandari, Ritu Chalise, Mayisha Maliha Kona, Marjhum Akter, Amina Khatun

P-24 **Antibacterial effect of garlic extract on multidrug resistant *E. coli* and *Salmonella* spp. isolated from chicken in Dinajpur district**
Tanvir Ashraf, Md. Khaled Hossain, Nazmi Ara Rumi, Fatema Akter Monika

P-25 **Microplastics beyond aquatic systems: A review of terrestrial contamination and its implications for food safety**
Md. Sajanul Haque, Md. Rakib Hasan, Dodul Mahamud, Md. Osman Gani, Mohammad Asazuzzaman, Mahmudul Hasan Sikder

P-26 **Antibacterial activity of fresh pomegranate juice against clinical isolates of *E. coli* and *Salmonella* spp.**
Zinia Sultana, Nazmi Ara Rumi, Md. Khaled Hossain, Elija Hassan, Sadia Islam Tithi, Israt Jahan Tonny, Iffatul Jannat

P-27 **Assessment beef quality of selected area of Bangladesh**
Emon Ahamed, Md. Arafat Jaman, Md. Roisul Momen, Tahera Yeasmin

P-28 **Evaluation of poultry farmer's knowledge, attitude and practice (KAP) towards antimicrobial use (AMU) and antimicrobial resistance (AMR) in Bangladesh**
Md. Arafat Jaman, Emon Ahamed, Md. Roisul Momen, Tahera Yeasmin

P-29 **Study on different poultry disease is prevalence at Savar and Dhamrai Upazilas of Dhaka district of Bangladesh**
Fariya Haque Barsha, Maysha Fahmida Turna, Md Riad, Noushin Angum Mou, Zaminur Rahaman

P-30 **Food safety challenges of meat industry in Bangladesh: Current status and future steps**
Nurtaj Labonna, Asma Sultana, Ridwanul Hoque, Ratna Islam, Muhammad Rabiul Hassan, A.B.M. Rubayet Bostami

P-31 **Integrating food safety knowledge, attitude, and practices of street food vendors and its impact on microbial profiles of street-vended food (Chotpoti) in urban Bangladesh**
Umma Motahara, Dipok Kumar Halder, Md. Abdur Rahman, Farah Zereen, Snigdha Sharmin Binte Sayeed, Md. Rajibul Islam, Mosfeka Sultana, Sukumar Saha

P-32 **Efficacy of commonly used anticoccidials against cecal coccidiosis in Bangladesh**
Bimal Chandra Karmakar, Nusrat Nowrin Shohana, Mohammad Zahangir Alam

P-33 **Study on pathological investigation of nitrate poisoning in a sheep farm**
Mohammad Shelim Ahmed, Tasnia Anjum Etu, Md. Abu Hadi Noor Ali Khan, Munmun Pervin

P-34 **Effects of acetaminophen (paracetamol) in chickens**
Mohammad Shelim Ahmed, Rafia Unjuman, Sadia Sultana Shammi, Md. Abu Hadi Noor Ali Khan, Munmun Pervin

P-35 **Multidrug resistance profiles of clinical and environmental isolates of *Pseudomonas aeruginosa* and *Escherichia coli* with detection of virulence genes**
Nazmi Ara Rumi, Md. Hasanul Baker Tamlikha, Md. Shajedur Rahman, Md. Khaled Hossain, Faiz Arafat Maksud, Elija Hassan

P-36 **Antimicrobial effect of *Moringa oleifera* on pathogenic MDR biofilm producing bacteria isolated from diabetic ulcer patient**
Elija Hassan, Nazmi Ara Rumi, Khaled Hossain, Sadia Islam Tithi, Faiz Arafat Maksud

P-37 **Investigating the role of socio-demographic factors in shaping consumer attitudes towards food safety in Bangladesh: A cross-sectional study**
Abdullah Al Mamun Hridoy, Md. Hafijul Islam, Andleeb Masood, Zulfaqar Sa'adi, Niraj Bohora, Md. Saiful Islam, Monoara Akter Lima, MD. Khalid Hasan, Dewan Hasan Al Mostakim, Md. Mahdi Hasan Munna, Md. Musfikur Rahman

P-38 **Isolation and antibiotic resistance profiling of *Klebsiella* spp. in sugarcane juice from street vendors in Mymensingh city**
Nusrat Jahan Niju, Arnob Saha, FNU Nahiduzzaman, Mst. Minara Khatun, Md. Ariful Islam

P-39 **Isolation, identification and characterization of antibiotic-resistant bacteria from chicken meat: An implication for food safety**
Mosfeka Sultana, Md. Rajibul Islam, Md. Abdur Rahman, Farah Zereen, Dipok Kumar Halder, Umma Motahara, Sukumar Saha

P-40 **Emergence of genotype XIII Newcastle disease virus in chickens in Bangladesh: A major constraint for poultry production and food security**
Farah Zereen, Md. Abdur Rahman, Md. Golzar Hossain, Md. Jahangir Alam, Md. Tanvir Rahman, Sukumar Saha

P-41 **Concurrent infection of hemorrhagic septicemia with foot and mouth disease: A major constraint to livestock health, productivity and food security**
Md. Abdur Rahman, Farah Zereen, Md. Golzar Hossain, Md. Al-Amin, Md. Jahangir Alam, Md. Tanvir Rahman, Sukumar Saha

P-42 **Bacteriological assessment of tilapia fish cultured in conventional and model setting ponds in Mymensingh**
Israt Jahan Yeva, Shahida Akhter, M. Saidur Rahman, M. Akhtaruzzaman Khan, KHM Nazmul Hussain Nazir

P-43 **The bioremediation potential of *Eisenia fetida* and *Eudrilus eugeniae* in cadmium and copper polluted cow dung**
Md. Imran Khan, Md. Abul Kashem, Md. Abdul Aziz

P-44 **Application of duck plague vaccine to produce safe duck egg and meat**
Layla Yasmin, Dr. Mohammad Ferdousur Rahman Khan, Towhidul Islam, Tazrin Kamal, Md. Hasibur Rahman, Md. Hafijur Rahman, Md. Bahanur Rahman

P-45 **Safe broiler production through prevention of inclusion body hepatitis virus infection**
Tazrin Kamal, Jahangir Alam, Md. Habibur Rahman, Layla Yasmin, Md. Jewel Hossain, Shuponkor Ghosh, Md. Hasibur Rahman, Md. Hafijur Rahman, Towhidul Islam, Md. Bahanur Rahman

P-46 **Farmers' perceptions and management strategies for banana (*Musa* spp.) insect pests and diseases in Bangladesh**
M. Bishal Rahman, Md. Fuad Mondal, Md. Ekhtiar Hossen Tisham, Md. Ridoy Babu, Md. Muhaiminur Rashid, Md. Omar Faruque, Md. Mehedi Hasan

P-47 **Addressing the hidden health crisis of packaged food: A Pathway to climate-resilient food safety and health**
Md. Foysal, Mehedi Hasan, Murad Hossain, Mst.Salma Khatun

P-48 **Foodborne *Staphylococcus aureus* in southern Bangladesh: Public health risks and the potential of natural flavonoids as adjunctive antimicrobials**
Md. Hasan Jafre Shovon, Jebin Tasmin, Pushpita Islam, Md. Nazmul Hasan

P-49 **Evaluation of the antibacterial potential of mango (*Mangifera indica*) seed kernels in Bangladesh**
Anandha Mozumder, Rahila Zannat Sadiea, Roni Mia, SM Nazmul Hasan, Sharmin Akter, Biplob Kumar Saha, Sukumar Saha, Md Golzar Hossain

P-50 **Bio-rational management of Alternaria leaf spot of mustard using beneficial bacteria**
Abdiwahab Nuh Mohamed, Md. Shariful Islam, Md. Mohidul Hasan

Category 13: Health, Diet and Nutrition

Code	Title and Authors
P-51	**Foot and mouth disease in cattle in Bera upazila of Pabna district, Bangladesh: A food security concern** *Dipok Kumar Halder, Md. Abdur Rahman, Farah Zereen, Chandan Sikder, Md. Rajibul Islam, Md. Golzar Hossain, Sukumar Saha*
P-52	**Effects of dietary monosodium glutamate (MSG) on growth performance, blood profile, and histopathology of vital organs of Swiss albino mice** *S. M Shertaz Islam, Shahana Begum, Sumaya Islam Supty, Arman Khan, Md. Mustafijur Rahman, Saiful Islam*
P-53	**Effects of long-term consumption of vegetable oils in rabbit: A health perspective study** *NSSI Nabila, S Yousup, M R Islam*
P-54	**Hazardous effects of mosquito repellent liquid vapor on vital organs of adult male rabbits (*Oryctolagus uniculus*)** *Mohammad Rabiul Karim, Md. Asif Karim Hemel, Abu Raihan, Khediza Akter*
P-55	**Mesenteric lymphnodes of goats found to carry zoonotic pathogen *Corynebacterium pseudotuberculosis* at higher rate; There may be a link between sick liver and infectivity** *Sadia Rahman Sharna, Tasnia Anjum Etu, Nazneen Sultana, Sadia Afrin Mim, Marzia Siddike Sournale, Md. Borhan Kabir Riyad, Munmun Pervin, Md. Abu Hadi Noor Ali Khan*
P-56	**Utilizing ATR-FTIR spectroscopy coupled with chemometrics for detecting and quantifying palm oil in adulterated ghee from Bangladesh** *Mst. Khadiza Khatun, Md. Athar Ishtiyaq, Fairuz Islam, Md. Abdullah, Tanusree Sarker, Md. Najim Uddin, Md. Atikul Islam*
P-57	**Rapid and non-destructive method development by ATR-FTIR spectroscopy with chemometric analysis for the determination of black pepper adulteration with papaya seeds from Bangladesh** *Tamanna Tasnim, Md. Azmain Faique, Mahmudul Bhuiyan, Mst. Nusrat Jahan, Most. Samsunnahar Akhi, Mizanur Rahman, Md. Atikul Islam*
P-58	**Palm oil detection and quantification in adulterated mustard oil from Bangladesh using ATR-FTIR spectroscopy with chemometric model** *Hillol Roy, Saidul Islam, Borna Rane, Asif Iqbal Emon, Mohammad Mahasin Ali, Md. Atikul Islam*
P-59	**Reproductive and productive performance of sheep under traditional management system at Barind area of Bangladesh** *MJU Sarder, MA Islam, R Khaton, MH Islam, M Niyamat Ullah, MI Haque*
P-60	**The detrimental effects of common food additive (monosodium glutamate) on health at the multigenerational level: A mouse model study** *Samia Rashid, Joynob Akter, Afrina Mustari, Jahan Ara Begum, Mohammad Alam Miah*
P-61	**Knowledge, attitudes and practices of dried fish producers in the coastal area of Bangladesh** *Mallika Raya, Nila Dhalia, Md. Mamunur-Rashidb, Md. Sazedul Hoquea*
P-62	**Polyphenolic content, antioxidant and free radical scavenging activity of industrial grape waste** *Md. Zakir Hassan, Richard Vincent Asase, Elena G. Kovaleva*
P-63	**Fishery waste production in Bangladesh: Sources, utilization's and potentialities** *Parizat Raza, Md. Sazedul Hoque, Tanushree Mondal, Mallika Ray*
P-64	**Biogenic extraction and antibacterial effect of ecofriendly synthesized chitosan nanoparticles from shrimp (*Penaeus monodon*) shell** *Sanjay Kumar Saha, Aminur Rahman, Geeta Roy, Md. Tanvir Rahman, Mahbubul Pratik Siddique, Md. Bahanur Rahman, Md. Shafiqul Islam*
P-65	**Dietary inclusion of oyster mushroom (*Pleurotus ostreatus*) stem residue on growth performance, meat quality and health status of Sonali chicken** *Shad Mahfuz, Atikul Islam Rajib*
P-66	**Genetic traceability of massese sheep milk: Detection of adulteration with other ovine and bovine milk** *Md Abu Saif, Tanvir Ahmed Sujon, Md. Dipu Sultan, Md. Rashedul Islam*

Abstracts POSTER

POSTER 01

Using tannery wastes in poultry feed: A matter of concern for safe poultry production in Bangladesh

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ABSTRACT

Nowadays, tannery waste is a matter of concern because if it is used as livestock feed, it could cause health hazards to humans. Therefore, this study was conducted to know the generation rates, utilization, disposal method of tannery solid wastes (TSWs), and inclusion level of it into the poultry feed. Moreover, this study determined the physical and chemical parameters in the poultry feed, including protein (CP) and heavy metals such as chromium (Cr) and lead (Pb) that were sold in the studied area. A field survey was conducted with twenty tannery industries, and broiler feed samples were procured from multiple farmers in Savar, Dhaka. Results showed that wet blue trimmings were generated in 3.84% that was used as an ingredient in poultry feed. The utilization of TSWs in poultry feed production in this country was limited to a maximum of 1.314% of the total annual production. Further, 55% of tanneries landfilled their waste, while 30% of them sold it for poultry feed. Besides, the CP% was determined in the range of 24.24 - 13.32 % and 18.15 - 11.01% for broiler starters and growers, respectively, where lower CP% was found only in unregistered feed mills. Trace amounts of Cr and Pb were identified in each of the feed samples. In conclusion, it can be stated that the percentage of tannery solid wastes mixed poultry feed was generated in negligible amounts, and the registered companies' feed was found normal in all aspects of the quality tested in the study.

Keywords: Broiler feed, feed mill, heavy metal, physical quality, tannery solid waste

POSTER 02

Effect of supplemental irrigation and manuring on performance of BRRI dhan103 under terminal drought condition in Aman season

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ABSTRACT

An experiment was conducted during August to November 2023 at Crop Physiology and Ecology research field, Hajee Mohammad Danesh Science and Technology University (HSTU), Dinajpur to find out the effect of supplemental irrigation and manuring on performance of BRRI dhan103 under terminal drought condition in Aman season. One rice variety (BRRI dhan103) and seven treatments (T_1: rainfed - control, T_2: one supplemental irrigation at 80 DAT, T_3: two supplemental irrigation at 70 DAT and 80 DAT, T_4: additional 5 t ha^{-1} poultry compost, T_5: additional 10 t ha^{-1} poultry compost, T_6: additional 2.5 t ha^{-1} biochar and T_7: additional 5 t ha^{-1} biochar) were assigned in randomized complete block design with three replications. Growth parameters (plant height, tillers hill^{-1}, leaves hill^{-1} and leaf SPAD value) at 50, 70 and 90 days after transplanting were enhanced significantly due to supplemental irrigation and manuring treatments. Yield attributes (panicles hill^{-1}, filled grains panicle^{-1}, thousand grain weight and grain weight hill^{-1}) as well as grain yield was increased due to different supplemental irrigation and manuring treatments compared to rainfed control. The results suggest that growth, yield attributes and yield of BRRI dhan103 was affected due to terminal drought stage in Aman season. Two supplemental irrigations could effectively alleviate the adverse effect of terminal drought stage and additional application of poultry compost both at the rate of 5 and 10 t ha^{-1} and additional application of biochar (5 t ha^{-1}) was found effective for alleviating the adverse effect of terminal drought stage in T. Aman.

Keywords: Irrigation, manuring, drought, Aman, yield

POSTER 03

Investigation of residual patulin in beef and chicken meat and liver samples using HPLC-PDA

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ABSTRACT

Patulin is a mycotoxin, which is a hazardous secondary metabolite that is generated by several molds, especially *Aspergillus* and *Penicillium* species. A quantitative method with broad applicability was validated for patulin determination in raw beef and chicken meat and liver by high-performance liquid chromatograph (HPLC) with PDA detection. For investigation, one hundred and twenty raw meat and liver samples were collected from six local markets in Dhaka, North and South City, Bangladesh. The certified patulin standard's correlation coefficient (r^2) from 1 to 30 µg/kg was 0.9991. The correlation coefficients (r^2) of corresponding matrix-matched patulin ranged from 1 to 30 µg/kg were 0.9984, 0.9983,0.9980, and 0.9990 for beef meat, beef liver, chicken meat, and chicken liver, respectively. Under optimized conditions, the inter-day recoveries 94.57 and 96.69%, 104.41 and 102.38%, 94.32 and 99.47%, 103.53 and 104.26% for beef meat, beef liver, chicken meat, and chicken liver were obtained at 10 and 15 µg/kg spiked concentrations, respectively. The relative standard deviation (RSD%) of inter-day recoveries was 0.77 and 2.47%, 0.38 and 0.71%, 0.72 and 0.41%, 0.84 and 0.62% for beef meat, beef liver, chicken meat, and chicken liver at spiked levels 10 and 15 µ g/kg, respectively. The limit of detection (LOD) was 0.06 µg/kg, and the limit of quantification (LOQ) was 0.18 µg/kg for the patulin standard. The residual patulin was determined in twenty-five beef meat, six beef liver, eighteen chicken meat, and eleven chicken liver samples ranged from 46.44 to 193.91, 43.31 to 66.91, 16.94 to 340.53, and 14.75 to 52.88 µg/kg, respectively. The results revealed that patulin was found 50% of the total beef meat, beef liver, chicken meat, and chicken liver samples.

Keywords: Mycotoxin, patulin, HPLC, beef meat, chicken meat

POSTER 04

Assessment of commercially packaged fluid milk and powdered milk quality available in Dhaka city: A food safety concern

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ABSTRACT

This research evaluated the organoleptic, physicochemical, biochemical, and microbial properties of pasteurized and powdered milk in Dhaka City. Pasteurized milk samples from different brands were collected, and powdered milk was reconstituted by adding eight parts of water. The samples were analyzed for quality using organoleptic, physicochemical, biochemical and microbiological methods. Organoleptic analysis of pasteurized milk (n=7) revealed consistent quality, with all samples rated as "Excellent" in appearance, displaying a milky white color and sweet flavor, indicative of high processing standards. Similarly, all reconstituted milk samples (n=8) exhibited uniform sensory attributes, achieving "Excellent" ratings for appearance, white color, and chewy texture, reflecting consistent quality across brands. Physicochemical analysis of pasteurized milk showed variations in specific gravity, total solids, fat, protein, ash, lactose, and acidity. Among the eight brands of reconstituted milk samples, higher levels of fat, protein, and lactose were observed in one sample, while one had the highest ash content. Biochemical tests confirmed the absence of nitrates, alcohol and detergents in pasteurized milk, indicating compliance with safety standards. However, some reconstituted milk samples tested positive for detergents, suggesting potential contamination. Microbial analysis revealed variability in total coliform counts (TCC) and total viable counts (TVC). This study highlights the importance of quality control in milk processing to ensure safety, nutritional quality, and consumer satisfaction. The findings provide valuable insights for enhancing milk quality and safety standards. While pasteurized milk's organoleptic and biochemical quality was superior, detergent contamination in reconstituted milk samples raises concerns, necessitating further research and government intervention.

Keywords: Pasteurized milk, reconstituted milk, organoleptic test, physicochemical analysis, microbial analysis

POSTER 05

Integrated farming system: An effective tactic for maintaining global food security in a changing climate

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ABSTRACT

Climate change poses a significant threat to farming, food security, and livelihoods worldwide due to rising temperatures, water shortages, heavy rainfall, and varying climatic events. The Integrated Farming System (IFS) creates a sustainable solution while simultaneously improving the resilience of ecosystems and the efficiency with which resources are utilized. This is accomplished through the integration of aquaculture, agroforestry, livestock, and crop production. This study reveals that IFS can enhance farm productivity by 25−35% and decrease input costs by 13−26% by implementing efficient nutrient cycling and refuse utilization procedures. Research has also shown that IFS enhances long-term soil fertility by increasing soil organic carbon by 11−27%. Additionally, IFS-practicing diversified farms report an 21−43% increase in income when contrasted with conventional monoculture farms. Although its advantages, issues like initial expenses, technological know-how, and policy support must be resolved before it can be widely adopted. This study examines how IFS might enhance food production, protect farmer livelihoods, and lessen the effects of climate change. Its effectiveness and adaptability can be further improved by using contemporary advancements like digital agriculture and precision farming. We conclude that by using integrated agricultural systems, farmers may accomplish the objectives of increasing food production and reducing their environmental impact. Strengthening research, extension services, and policy frameworks is necessary to maximize IFS's potential to guarantee global food security.

Keywords: Integrated farming system, food security, climate change, farm productivity

POSTER 06

Determinants of the impact of adoption of climate-smart agriculture technologies for sustainable food security in the haor region of Sunamganj

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ABSTRACT

Despite issues like climate change, floods, droughts, and extreme weather events endangering food security and productivity, Bangladesh's agriculture remains the main source of livelihood and income. The objective of this study is to investigate the determinants of the impact of adoption of climate-smart agriculture (CSA) technologies for rice production on food security in the haor area of Bangladesh. The study included 200 rice-farming families from Tahirpur and Jagannathpur upazilas in Sunamganj, Bangladesh. The participants were chosen using a basic random sample approach. To determine the factors affecting the adoption of climate-smart agriculture technologies in rice cultivation within haor regions, the logit model was applied. Both adopters (46.67%) and non-adopters (53.85%) had 16−30 years of agricultural experience, according to the current study. Of the non-adopters, 87.41% had a high HDDS score (consuming food 7−12 food groups), while the non-adopters had a score of 70.77%. This implies that adopters of the CSA are more likely to have access to a greater range of nutrient-dense foods in their households. Non-adopting households are 38.46% extreme poverty and 35.38% hardcore poverty, while adopter households are 9.63% hardcore poverty and 24.44% absolute poverty, according to the research. The study found a significant difference (p value 0.000) in calorie intake between adopters and non-adopters of CSA technology, indicating a positive impact on calorie intake. Farmers' climate-smart technology priorities are influenced by socioeconomic status, education, farming experience, income, and access to financing. Policymakers should prioritize education, farming expertise, insurance, advisory services, and loan accessibility.

Keywords: Climate-Smart Agriculture, food security, adoption, haor region

POSTER 07

The productivity and challenges of buffalo in Bangladesh

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ABSTRACT

This research study was undertaken between June 2022 and December 2024 in Bajitpur, Austagram, Nikli, and Mithamain in Kishorgonj districts to analyze buffalo production and reduction through home farming and bathan farming. A total of 200 pre-designed questionnaires (100 bathan and 100 family) were used to collect data from buffalo farmers through direct interviews. According to this analysis, 73% of farmers have one to three buffalo per home, and 62% have 40 to 200 buffalo per bathan by 2024. In 2022, 86% of farmers have 2-8 buffalo per home, while 76% have 50 to 250 buffalo per bathan. During a lactation period of 268±5 days in 2022 and 756±27.5 litres in 2024, the household's total milk yield was 820±27.5 litres, with an average daily milk production of 3 to 8 litres. A total of 435±22.5 litres of milk were produced in Bathan during a lactation period of 215±12 days in 2022 and 415±18.5 litres in 2024, with an average daily milk output of 1 to 5 litres. In home farming in 2022, the average age of first calving, service per conception, gestation period, and calving interval were 37 months, 1.5 numbers, and 312±5 days, respectively, and 39 months, 1.7 numbers, 310±5 days, and 490±12 days. In 2022, the months were 40 months, 2.5 numbers, 315 ± 5 days, and 515 ± 15 days, whereas in 2024, they were 38 months, 1.5, 312 ± 5, and 510 ± 12. The variables that impacted buffalo farming were 43% lower water levels in the Haor area, 53% import, 29% heavy heat and cold, 19% sufficient wallowing water, and 7% disease. The government and livestock sector officials should take the required efforts to promote buffalo production.

Keywords: Buffalo, bathan, production, milk

POSTER 08

Unveiling the causes of mortality of native chickens in Bangladesh: A cross-sectional analysis

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ABSTRACT

Bangladesh presents a promising environment for the production of indigenous chickens, playing a significant economic and cultural role in society. This study examined the causes of mortality in Indigenous chickens through a cross-sectional survey conducted among 399 households across the country. The highest proportion of respondents came from Rajshahi (46%), followed by Rangpur (29%), Mymensingh (12.5%), Khulna (8%), and Chattogram (4%). Most households (45.4%) surveyed were headed by individuals aged 31-40 years, with females (71.5%) significantly outnumbering males ($p<0.01$). The majority of respondents (45%) had attained primary education, and a substantial 84% reared Desi chickens, primarily adopting a scavenging system (62.9%). The overall mortality rate was found to be 16%, with significant variation across regions ($p<0.01$). Diseases accounted for 76% of the mortality (12.2% overall), with Newcastle disease being the leading cause, responsible for 70.75% of disease-related deaths (8.62% of total mortality), followed by fowl pox (18.14%) and fowl cholera (7.48%). Predation contributed to 20% of the overall mortality (3.2%). Statistical analysis indicated significant associations between vaccination status, supplemental feeding, and disease prevalence ($p<0.05$), though no direct link was found between vaccination and reduced mortality ($p>0.05$). Mortality rates were significantly correlated with the number of diseased birds ($p<0.01$), and the incidence of Newcastle disease was notably higher in northern regions.In conclusion, the findings indicate that diseases, particularly Newcastle disease, are the primary contributors to mortality among indigenous chickens, worsened by regional husbandry practices and environmental factors. Predation also poses a significant threat. To mitigate indigenous chicken mortality, effective disease management and preventive measures are essential. The study underscores the necessity for targeted disease management strategies, including enhanced vaccination protocols and predator control, to improve the sustainability of indigenous chicken farming in Bangladesh.

Keywords: Indigenous, mortality, disease, sustainable, cross-sectional analysis

POSTER 09

Impact of climate change on shrimp farming in south-western part of Bangladesh

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ABSTRACT

Shrimp farming plays a crucial role in Bangladesh's fisheries sector, contributing to food security and exports. However, climate change poses a significant threat, particularly in the southwestern region. This study examines climate change impacts and adaptation strategies in Khulna Division through a survey of 88 shrimp farmers using a semi-structured questionnaire. Findings indicate that cyclones, rising water temperatures, droughts, floods, and salinity intrusion severely affect shrimp farming. Sea level rise further complicates site selection. Water quality deterioration includes high pH imbalance (84%), pollution (69.32%), reduced dissolved oxygen (64.77%), low natural food availability (46.59%), and increased turbidity (43.18%), with most water appearing light-colored (54.54%). Climate change has led to a decline in wild fry availability, increased mortality rates, and higher production costs, reducing overall yield and income. Prevalent diseases include white spot (95.45%), brown spot (81.81%), and Macrobrachium muscle necrosis (56.81%). Farmers have adopted adaptation strategies such as selecting higher land, constructing embankments, ensuring year-round water availability, improving water management, and providing shading and netting. Additionally, securing loans helps sustain farming activities. The study underscores the need for effective implementation of adaptation measures supported by government policies to promote climate-resilient shrimp farming, ensuring food security and safety in Bangladesh.

Keywords: Climate change, shrimp farming, climate change impact, climate adaptation and mitigation, coastal Bangladesh

POSTER 10

From popularity to productivity: The indispensable role of research in advancing rooftop farming in Bangladesh

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ABSTRACT

In recent years, rooftop farming has emerged as a significant practice amidst the urban landscape of Bangladesh, primarily in densely populated cities like Dhaka and other cities like Sylhet. Over the past three years, through survey we assessed gardeners' perceptions of rooftop farming, plant diversity, and insect pest status in Sylhet metropolitan areas. Additionally, we conducted research on optimizing growing conditions for vegetables such as okra and tomato. Findings revealed that 87.50% of respondents identified a lack of technical knowledge as the primary challenge, while only 6.67% had received any formal training. Gardeners faced insect pest issues but had limited knowledge of pest identification, pest management, beneficial insects, and pollination, with only 19% recognizing the role of pollinators and floral resources in rooftop farming. Experimental results demonstrated that cement-made pots yielded the highest productivity for both okra and tomato. Regarding potting substrates, a soil-to-vermicompost ratio of 2:1 was found to be the most effective, producing the highest yield while minimizing insect pest infestations for both crops. Despite the growing popularity of rooftop farming, significant gaps remain in scientific knowledge and technical expertise including fertilizer and water management, pest management etc. To maximize productivity and sustainability, further research must provide crop and location-specific recommendations alongside structured training programs. Government and non-governmental organizations should actively support rooftop farming through policy initiatives, technological advancements, and knowledge dissemination. Addressing these challenges will enhance urban food production, promote sustainable agricultural practices, and contribute to food and nutritional security for city dwellers in Bangladesh.

Keywords: Urban agriculture, rooftop farming, vermicompost, tomato, okra, vertical farming

POSTER 11

Evaluation of milkers' attitudes, knowledge, and practices in the dairy farms in and around Mymensingh city

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ABSTRACT

A microbiological evaluation was conducted as part of this study to determine how dairy milkers' knowledge, attitudes, and practices (KAP) impact milk safety and cleanliness in and around Mymensingh city. A cross-sectional study was carried out by directly observing 100 farmers from seven chosen sites and using semi-structured questionnaires. The farms were divided into four categories according to the quantity of cattle they had. Polymerase Chain Reaction was used to identify the pathogens in 60 milkers' hand swabs for microbiological examination. The pathogens were *S. aureus* (nuc gene) and *E. coli* (stx-1, stx-2 genes). According to sociodemographic statistics, respondents ranged in age and educational attainment, with 75% of them being men and 25% being women. About 25% of respondents used water and soap to wash their hands, compared to 75% who used water alone. Remarkably, 92% of respondents did not take any preventative measures to prevent coughing or sneezing over milk. Furthermore, only 5% used soap and water to wash their udders, whereas 95% did so with water alone. While 5% utilized plastic buckets for milk collection, 95% used metal containers. Only 20% of people were aware of milk-borne zoonoses. Farms in the D category had the greatest mean TVC (5.797 ± 0.553 log CFU/ml), whereas farms in the A category had the lowest (3.592 ± 0.504 log CFU/ml). *S. aureus* and pathogenic *E. coli* were found in 18.33% and 30% of samples, respectively. Improved hygiene procedures and education among dairy milkers are necessary, as the results show low KAP for milk cleanliness and little knowledge about milk-borne zoonoses.

Keywords: KAP, dairy farms, TVC, milk-borne zoonoses, milker's hygiene

POSTER 12

Improving cookie quality with germinated chia seed *(Salvia hispanica L.)* flour: A sustainable bioprocessing approach

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ABSTRACT

As interest in functional foods continues to grow, the development of sustainable bioprocessing techniques has become increasingly important. Germination, a key method, enhances seeds' nutritional and functional properties, making them suitable for innovative food applications. Chia seeds, widely recognized for their rich nutrient content, not only serve as a valuable alternative ingredient in the food industry but also produce nutrient-dense green matter, which acts as a source of biologically active compounds. Given these benefits, germinated chia seed flour (GCSF) and non-germinated chia seed flour (NCSF) may improve composite flours in baked goods. This study examined their effects on wheat flour-based cookies. GCSF was prepared by sprouting chia seeds for five days, followed by drying and grinding. To assess its impact, cookies were formulated with different flour combinations: 10% GCSF (T_1), 10% non-germinated chia seed flour (NCSF) (T_2), and a blend of 5% GCSF + 5% NCSF (T_3), while a control sample (T_0) consisted of 100% wheat flour. The effects of GCSF on the cookies' nutritional composition, physicochemical characteristics, technological attributes, and sensory properties were analyzed. Results showed that incorporating GCSF significantly ($p < 0.05$) improved the water absorption capacity (0.94 g H_2O/g dry sample), oil absorption capacity (0.97 g oil/g dry sample), crude protein (13.48%), and crude fiber (5.24%) content. In contrast, cookies made with NCSF had higher ($p < 0.05$) crude fat (23.92%) and total carbohydrate (54.07%) levels. However, principal component analysis (PCA) indicated a slight decrease in overall consumer acceptance when GCSF was included in the formulation.

Keywords: Germinated chia seed flour, sustainable bioprocessing, functional cookies, nutritional enhancement

POSTER 13

Effects of *Rhizobium* inoculum on French bean nodulation with its isolation, characterization and identification in acid soils

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ABSTRACT

This study was aimed to isolate, characterize and identification of *Rhizobium* from root nodules of French bean grown in acidic soil. The nodule collection was tried from farmers' field of three upazilas. However, no nodules were visible for high soil acidity (pH 4.3-4.5). A pot experiment was conducted in the soil science research field, Sylhet Agricultural University. Six treatments viz. T_0 = Control (without *Rhizobium* inoculum) + Recommended Fertilizer (RF), T_1 = *R.* inoculum 15 g/kg seed + RF, T_2 = *R.* inoculum 30 g/kg seed + RF, T_3 = *R.* inoculum 45 g/kg seed + RF, T_4 = *R.* inoculum 60 /kg seed + RF and T_5 = *R.* inoculum 75 g/kg seed + RF were used for experiment following CRD with four replications. At the flowering stage, nodules were collected from all treated plants except T_0. And the highest number of effective nodules were found from T_4 treated plants. The *Rhizobium* bacterium was isolated from nodules on YEMA medium which were white translucent, and irregular in form with smooth surface, mucous producing, circular convex, raised elevation, glister and non-motile colonies. The strains were found to be fast growing. The range of colony size of *Rhizobium* sp. was 2-3.5 mm in diameter. The identification of isolated pure cultures through colony morphology analysis and biochemical properties includes gram staining (negative), bromothymol blue test (acid producing) and mannitol salt agar (positive). These isolates may be used as consortium to improve the growth of French bean in acid soil.

Keywords: Biological nitrogen fixation, French bean, *Rhizobia* and YEMA media.

POSTER 14

Salinity negatively correlates with the production and immunity of chicken: A molecular insight for food security and safety issues

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ABSTRACT

Salinity intrusion into freshwaters due to climate change and anthropogenic activities is a growing global concern, increasing disease susceptibility in humans and animals, and reducing productivity. However, its effects on birds have not been fully elucidated yet. Therefore, this study examined the effects of salinity on the production and immunity of birds and the mechanisms by which immunity is compromised. Broiler chicks were given different concentrations of salty water (control = normal water, treatment = 5 g/L, treatment = 10 g/L, and treatment = 15 g/L). Blood and organs from different groups of broilers were biochemically and histopathologically examined. Birds in salt-treated groups showed significantly less feed intake, and body weight gain but higher feed conversion ratio (FCR) compared to control. Serum analysis revealed a reduced systemic antibody titer in the salt-treated groups. Primary lymphoid organs (thymus and bursa of Fabricius) were reduced in size in the salt-treated group due to cellular migration and depletion. Importantly, most of the parenchyma of lymphoid organs were replaced with fibrotic tissue. Gut microbes, *Escherichia coli* and *Salmonella* spp., from salt-treated groups, showed less viability but developed antibiotic resistance. Salinity levels were significantly and negatively correlated with feed intake, body weight gain, antibody titer, lymphoid organ size, and gut microbes' viability, while FCR, fibrosis of lymphoid organs, and antibiotic resistance were positively correlated. In conclusion, increased salinity is a possible threat to food security and safety as it decreases body weight gain, reduces immunity, and influences the development of multi-drug-resistant gut microbes.

Keywords: Salinity, production, lymphoid organ, immunity, multi-drug resistance

POSTER 15

Comparative study of liver pathology in different species of animals in Mymensingh

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ABSTRACT

Liver is the largest gland and play a vital role in the body with its versatile functions. However, liver damage can make it unsuitable for human consumption and contribute to the spread of zoonotic diseases. Hence, this study aimed to examine liver lesions in different animal species through gross and histopathological methods. A total of 80 liver samples were collected from cattle (n=30), sheep (n=5), goats (n=20), chickens (n=15), and fish (n=10) from slaughterhouses and local market in Mymensingh, between May and October 2024.Grossly, various type of liver damages found in 25 (31.25%) out of 80 livers such as discoloration, hemorrhage, congestion, necrosis, abscesses with pus, and fasciola infestations. Histopathological examination revealed that 72.5% (58/80) of the livers showed various lesions, including circulatory disturbances (hemorrhage, congestion, hemosiderosis), degenerative changes (fatty infiltration, necrosis, inflammatory conditions (lymphoplasmacytic hepatitis, nodular hepatitis, abscesses), parasitic infestations, cirrhosis, and bile duct changes (hyperplasia, chronic cholangitis, metaplasia, fibrosis). Fibrosis and abscesses were the most common findings. Among five species, goats showed the highest rate of hepatic lesions, followed by cattle, chickens, sheep, and fish. From the present study, it proved that considerable numbers of liver lesions were observed in animals that is crucial for animal health and public safety. These results underline the importance of liver examination in slaughterhouses for diagnosing and preventing liver diseases, and further studies are needed to explore the full impact of these conditions on animal and human health.

Keywords: Liver, pathology, histopathology, slaughterhouse

POSTER 16

Extraction method development and quality assessment of *Piper betle L.* leaves essential oil from Bangladesh

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ABSTRACT

Piper betle L. leaves, widely cultivated in Bangladesh, are known for their medicinal and aromatic properties, making their essential oil a valuable product. This study employs a steam distillation set to extract the essential oil from different sizes of betel leaves, evaluating the yield and efficiency of a newly made steam distillation set by local technology and comparing it with a standard steam distillation set. The quantification of TP and TF were measured by Folin-Ciocalteu and aluminum chloride test, respectively. In vitro, antioxidant capacity was determined by 2,2′-diphenyl-1-picrylhydrazyl (DPPH) methods and the yield of the locally manufactured distillation set was compared with the standard glass apparatus set. A significant variation of TP, TF and antioxidant activity was observed over the different size of *piper betle L.* leaves. The yield of betel leaf essential oil varies from 0.328 % to 0.512% (dry weight basis). The quality assessment encompasses physicochemical properties of the color of extracted oil is pale yellow to brownish colour and specific gravity is 0.967 kg/m^3 to 0.977 kg/m^3. The ATR-FTIR analysis of betel leaf essential oil confirmed the presence of amines, monomeric alcohols, phenols, carboxylic acids, alkanes, ethers, esters and alkenes based on the absorption band intensity. Therefore, this newly made distillation set can extract high-quality essential oil as well as be sustainable for agricultural practice.

Keywords: *Piper betle L.*, essential oil, steam distillation set, total phenol, total flavonoid

POSTER 17

Up-scaling *Trichohderma*-based bio-fungicide for the bio-rational management of wilt *(Fusariumo oxysporum)* of tomato

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ABSTRACT

The present study aimed to formulate a bio-fungicide for the suppressing of fungal wilt of tomato caused by *Fusarium oxysporum.* Several strains of *Trichoderma* was isolated, screened against FOL and identified based on molecular characterizations. In dual culture, *T. asperellum* HSTUT-1 gave maximum growth inhibition of FOL (84.44%) followed by *T. asperellum* HSTUT-2 (80%) and *T. harzianum* HSTUT-3 (72.22%). Single application of charcoal-based formulated *T. asperellum* HSTUT-1 exhibited highest reduction of wilt incidence (~71.13%) and severity (~69.81%); higher yield (~14.32 kg/plot); highest plant height (~122 cm), number of branches (~35.33), number of flower (~53.33/plant), number of fruits/plant (~45), higher root length (~30 25 cm), shoot length (~98.5 cm), root weight (~20.87g) and shoot weight (~289g) in both BARI Tomato 15 and BARI Tomato 17. Charcoal-based formulated *T. asperellum* HSTUT-1 demonstrated maximum fruit setting (94.22% and 84.38%), higher accumulation of lycopene content (6.65 & 6.58mg/100g), β-carotene (1.55 & 1.51mg/100g), TSS (6.25 & 6.15 ^{0}Brix), higher grade of firmness (2.75 & 2.65 kg/m^2), pH (5.8 & 5.5 %), respectively. Charcoal-based bio-fungicide (*T. asperellum* HSTUT-1) showed high density (15.5x10^{6}cfu) of spore even after 180 days after storage. The study explored the potentiality of the developed bio-fungicide for the safe production of tomato.

Keywords: *Trichoderma,* formulation, tomato, wilt, safe production

POSTER 18

Development of mushroom variety through protoplast fusion

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ABSTRACT

The shifting climate patterns in Bangladesh have posed a significant challenge to mushroom cultivation, particularly during the intense summer. Notable, all commercially grown mushroom varieties in the country are exotic and primarily suited for winter conditions. As a result, farmers face significant challenges in growing them during hot weather. To tackle this issue, there is an urgent need to develop heat-resistant strains that thrive in such harsh conditions. The protoplast fusion technique offers great potential as a biotechnological tool for improvement in industrial strains, establishing genetic systems, and overcoming incompatibility barriers in relative and non-relative fungi. Therefore, this study aims to establish a protocol for protoplast fusion that can lead to the hybridization between fungal strains. The method involves pretreating fungus mycelium with a 0.9M NaCl solution, followed by digestion with a mixture containing sucrose (10 ml) and the enzymes (15 mg cellulase, 15 mg driselease, and 2.5 mg lysing enzyme). The resulting solutions were then centrifuged, washed, and resuspended in sucrose solution for identification using bright field microscopy. Results showed a high protoplast yield of 6.13 x 10^6 cells·ml^{-1} (protoplast concentration per ml) as determined using a hemocytometer. Furthermore, the isolated protoplasts were fused using PEG, resulting in the formation of a somatic hybrid. This study marks the first of its kind in Bangladesh.

Keywords: Mushroom, protoplast, fusion, hybrid

POSTER 19

Technology in food and nutrition security: A hope for greener light

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ABSTRACT

A major worldwide concern, food and nutrition security is made worse by pandemics, population increase, climate change, and geopolitical conflicts. This paper eplore how technology may help ensure the security of food and nutrition, especially when it comes to sustainable agriculture. The study illustrates how technical developments have changed agricultural output and allowed the globe to fulfill the rising need for food by using examples from the past and present. In order to guarantee long-term food security, the study also addresses the significance of implementing suitable technology, boosting funding for agricultural research, and encouraging sustainable practices. In order to achieve sustainable development and inclusive peace, the conclusion highlights the necessity of a well-rounded strategy that incorporates technology with eco-friendly practices.

Keywords: Food security, agricultural technology, sustainable agriculture, climate change, nutrition security

POSTER 20

Green nanotechnology for food security: A sustainable strategy for prolonging bell pepper shelf life

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ABSTRACT

Nanocoating is deemed valuable and sustainable in reducing the waste of millions of tons of fruits and vegetables from rot and degradation. This research intends to biosynthesize zinc oxide nanoparticles (ZnO NPs) utilizing aqueous extracts of Snapdragon and Marigold leaves through a microwave-assisted technique and utilized as nanocoating on fresh bell peppers. Scanning Electron Microscopy, Energy dispersive x-ray spectroscopy, Transmission Electron Microscopy, X-ray diffraction, Fourier transform infrared spectroscopy, UV–visible spectroscopy, and antimicrobial activity were used to characterize the nanocoating. Characterization confirmed their highly crystalline structure, spherical with irregular morphology, high purity, and stability, with a mean size of 60.76nm. To study the effect of ZnO NPs on bell pepper's shelf life, the 100 ppm solution of both plant extract synthesized ZnO NPs and combined ZnO NPs (1:1) have been dip coated on bell peppers. The physiological postharvest quality indices and antioxidant capacity are employed to consider variations in shelf life. It was seen that combined ZnO NPs retained the bell pepper's quality for a longer period and extended their shelf-life compared to control and individual ZnO NPs coating. Also, it retained higher total chlorophyll content(~2.6 fold) and ABTS radical scavenging (~1.8 fold) over the control at the end of ambient storage. In this work, it has been investigated that lower pH decreases the yield of ZnO NPs, and at higher concentrations, ZnO NPs showed greater antimicrobial activity. Overall, developed nanoparticles are promising biocontrol agents that can preserve quality and nutritional value during the storage of bell peppers.

Keywords: ZnO nanoparticles, nanocoating, bell pepper, shelf-life, antimicrobial

POSTER 21

A research on challenges for health care services in upazila health complex: A study on three chars in Kamalnagar, Lakhsmipur

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ABSTRACT

Upazila health complexes are primary healthcare facilities situated at the sub-district level across all regions of Bangladesh. Char refers to the isolated area from the common land and it is situated in the middle of river. Health care services are indispensable for human progress and development. The people of our rural Bangladesh don't get proper healthcare services from their upazila health complex due to several reasons. The study explored these barriers from the insight discussion with rural people. A mixed method research consisting of interview, focus group discussion from 90 respondents of rural Bangladesh is conducted. Random and convenient sampling method are used for choosing sample from big size of population. This study highlighted the challenges and barriers faced by the people in Char area (riverine island) of rural Bangladesh and also publish some suggestions for improving the service quality in the healthcare services in rural Bangladesh. The data of the study shows that people who are living in the char (riverine island) can't go to upazila health complex due to transportation problem. That's why they don't get enough healthcare services timely. Some others challenges are also identified in the study such as lack of financial ability, unavailability of doctors and other healthcare staff, providing service in delay, lack of health awareness etc. Geographic isolation also hampers on the accessing healthcare services to the upazila health complex (UHC). Lack of equipment in the UHC also creates problem for the citizen to ensure proper health care access. This study gives some recommendations for ensuring the healthcare access such as making a proper transportation channel, increasing the number of doctors and healthcare workers, initiating subsidy program for making the people of char areas financially capable, arranging health awareness campaign etc. The findings will be helpful for the policymakers of the government, health sector stakeholders and learners.

Keywords: Challenges, healthcare services, Upazila Health Complex (UHC), Kamalnagar, Lakshmipur

POSTER 22

Influence of seasonal variations, testosterone levels, and micronutrient supplementation on scrotal circumference and semen quality in rams

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ABSTRACT

This study focused on determining the effect of seasonal variations and testosterone levels in scrotal circumference, semen characteristics and the effects of vitamin E, B12, and selenium supplementation over a period of 12 months. Significant differences in the parameters were observed in breeding and non-breeding seasons. Scrotal circumference was highest in the breeding season (20.6 ± 0.44 cm) and lowest in the non-breeding season (19.1 ± 0.3 cm). The seasonal influence on testicular dimensions was evident, though not statistically significant ($P > 0.05$). The volume of ejaculates increased slightly from the non-breeding season (0.72 ± 0.05 ml) to the breeding season (0.75 ± 0.02 ml). The breeding season produced the highest sperm concentration value of 3481.9 ± 56x10^6/ml as measured compared to 3288.5 ± 91x10^6/ml during the non-breeding season ($P < 0.05$). The breeding season increased the normal spermatozoa percentage result to 87.2 ± 1.12%, while the non-breeding season reached 82.9 ± 1.12% ($P < 0.05$). Testosterone levels were significantly higher during the breeding season (9.27 ± 1.95 ng/ml) compared to the non-breeding season, where values ranged from 5.57 ± 2.17 ng/ml to 5.42 ± 1.98 ng/ml ($P < 0.05$). Post-treatment, sperm concentration rose from 3059.2 ± 67.4x10^6/ml to 3471.2 ± 56x10^6/ml ($P < 0.05$), and motility improved from 78.5 ± 0.03% to 81.3 ± 0.01%. This research shows that seasonal variations and testosterone levels impact reproductive capacity and suggests that micronutrient supplementation can improve semen quality in local ram populations.

Keywords: Seasonal variation, testosterone, semen quality, sperm concentration, reproductive capacity

POSTER 23

Detection of antimicrobial-resistant bacterial pathogens from houseflies in different locations of Dhaka city

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ABSTRACT

Houseflies *(Musca domestica)* are abundant in human settlements and act as vectors for a wide range of infectious diseases. Marketplaces including fish and meat shops, fruit and vegetable shops, and roadside food courts are the common places where houseflies thrive. This study investigated the prevalence of pathogenic bacteria carried by the houseflies and their antimicrobial-resistance (AMR) profile. A total of 40 houseflies were captured from different sites of Dhaka city, and bacteria were isolated from their external surface and gut content by culture. Furthermore, the isolated bacterial species were tested for antimicrobial susceptibility. Results showed that pathogenic bacterial species were found higher in number isolated from the external surface of houseflies than their gut contents. The highest prevalence on the external surface of houseflies was *Staphylococcus aureus* (60%, n=24/40) followed by *Staphylococcus epidermidis* (40%, n=16/40), *Klebsiella* spp. (40%, n=16/40), *Staphylococcus saprophyticus* and *Escherichia coli* (20%, n=8/40). In the gut contents the highest prevalence was also *Staphylococcus aureus* (80 %, n=32/40) followed by *Klebsiella* spp. (60%, n=24/40), *Shigella* spp. and *Enterobacter* spp. (20%, n=8/40). Additionally, all the isolated bacterial species showed multi-drug resistance, indicating their role in transmitting AMR genes to humans via contamination of the foodstuffs. In conclusion, several pathogenic bacteria were found to be harbored by the houseflies in Dhaka city that were found resistant to multiple drugs, which pose signific threat to human and animal health. Therefore, good hygiene practices, especially in markets and public places, are crucial to control the houseflies and mitigate the spread of AMR bacterial pathogens.

Keywords: Houseflies, vectors, pathogenic bacteria, antimicrobial resistance, public health

POSTER 24

Antibacterial effect of garlic extract on multidrug resistant *E. coli* and *Salmonella* spp. isolated from chicken in Dinajpur district

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ABSTRACT

Poultry birds, especially chickens are widely consumed in Bangladesh. But excessive and indiscriminate use of different antibiotics have led to the rapid spread of antibiotic-resistant bacteria (ARB) in chicken and the environment, creating global public health problems. This study aims to determine the antibiotic resistance profile of *E. coli* and *Salmonella* spp. isolated from chicken, and to study the antibacterial effect of garlic *(Allium sativum)* extracts against the multidrug-resistant (MDR) poultry pathogens. A total of 90 faecal samples (from 50 broilers and 40 Sonali chickens) were collected from different farms and retail market at Dinajpur district. The bacteria were isolated through culture in different bacteriological culture media and identified through microscopic examination, biochemical tests, and polymerase chain reaction (PCR) test. From 90 faecal samples, 74 isolates of *E. coli* (82.22%) and 32 isolates of *Salmonella* (35.55%) were identified. For further confirmation molecular identification of *E. coli* and *Salmonella* isolates was carried out by amplification of Eco gene and invA gene. Antibiotic sensitivity tests on 10 isolates of *E. coli* and 10 isolates of the *Salmonella* spp. were conducted using 10 commercially available antibiotic through disc diffusion method. The result revealed that 100% *E. coli* and *Salmonella* spp. were resistant to Ampicillin, Chloramphenicol, Ciprofloxacin, Tetracycline, Doxycycline and Cefalexin. On the other hand, the antibacterial activity of crude and diluted garlic extracts against MDR *E. coli* and *Salmonella* were determined by paper disk diffusion method. The results revealed that crude garlic extracts have higher antibacterial effect than diluted extracts.

Keywords: Antibacterial effect, garlic extracts, MDR bacteria, chicken

POSTER 25

Microplastics beyond aquatic systems: A review of terrestrial contamination and its implications for food safety

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ABSTRACT

Microplastics (MPs) have emerged as a significant environmental and food safety concern, with most research focusing on aquatic ecosystems. However, their presence and impact in terrestrial environments remain underexplored. This systematic review synthesizes research on MPs contamination in terrestrial ecosystems and its implications for food safety. A comprehensive search of PubMed, CrossRef, CAB Direct, DOAJ, JournalTOCs, AGRICOLA, ScientificGate, and other databases identified 8,937 articles published between 2000 and 2025. The majority (7,913; 87.95%) were published between 2020 and 2025, followed by 1,022 (11.36%) between 2010 and 2019, and only 2 (0.02%) between 2000 and 2009. While most studies focused on aquatic contamination, only 72 examined terrestrial ecosystems. Among these, 61 (84.72%) were published between 2020 and 2025. China had the highest number of publications (31; 43.06%), followed by Slovenia (6; 8.33%), with Asia leading continentally (40; 55.56%). After excluding review articles, 35 original studies were analyzed, with 26 (74.29%) published between 2020 and 2025. Of these, 11 (31.43%) were environmental surveillance studies, while 24 (68.57%) were experimental. Worldwide only two original studies found on MPs in poultry. In Bangladesh, only six terrestrial MPs studies were found. Detection methods primarily included density separation, chemical characterization, stereomicroscopy, and Fourier Transform Infrared (FTIR) spectroscopy. Polyethylene (PE) and Polypropylene (PP) were the most frequently detected polymers. This review highlights the scarcity of research on terrestrial MPs, particularly in poultry production. Further studies are essential to assess MPs' presence, pathways, and potential risks to food safety.

Keywords: Microplastics, terrestrial environment, poultry, food safety

POSTER 26

Antibacterial activity of fresh pomegranate juice against clinical isolates of *E. coli* and *Salmonella* spp.

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ABSTRACT

This research focused on searching effective antimicrobial agents from natural sources since the circulating microbes have already been resistant to most of the currently practiced antibiotic. Considering the biological functions, the pomegranate *(Punica granatam)*, a polyphenol rich fruit received a great deal of attention for such purpose. The present study evaluated antibacterial activity of Fresh pomegranate juice against *E. coli* and *Samonella* spp. For this purpose, a total number of 30 samples was collected from clinically affected patients. Another sample pomegranate was collected from local market. Bacteria was investigated using standard bacteriological techniques. A total number of 10 *Salmonella* spp. and nine *E. coli* were isolated from human stool. Isolated bacteria from human blood were four *salmonella* spp. and no E. *coli* was positive in blood samples. The identified isolates were studied for their in vitro antibiotic sensitivity by agar disk diffusion method against commonly used antibiotics. Antibiogram profile revealed that *E. coli* and *Salmonella* spp. was 100% resistance against most of the antibiotic used. On the other hand, the antibacterial activity of Fresh Pomegranate Juice against *E. coli* and *Salmonella* spp. were determined by agar gel diffusion method in nutrient agar medium. Antimicrobial drug resistance in human bacterial pathogens is worldwide issue and as a consequence, effective treatment and control of such organisms remain an important challenge. Bacterial resistance has appeared for every major class of antibiotic use in this study. Fresh Pomegranate juice had antibacterial activity due to its highest polyphenol content and antioxidant capacity. For this reason, we established a model to test fresh pomegranate juice as a natural antibacterial agent.

Keywords: Pomegranate, antimicrobial activity, antibiotic resistance

POSTER 27

Assessment beef quality of selected area of Bangladesh

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ABSTRACT

Meat quality is substantially influenced by pre-slaughter conditions. This study evaluated meat processing in four districts in Bangladesh, including Pabna, Rajshahi, Bogura, and Natore. It analyzed microbiological load, pH, moisture, drip loss, meat adulteration, and ash determination. An examination of 200 butcher shop samples was conducted between January to December 2024. Hygienic conditions were significantly higher ($P<0.05$) in Rajshahi and lower in Natore compared to other districts. Microbial burdens were much higher ($P<0.05$) in Natore district and lower in Rajshahi. *Staphylococcus* and other bacterial sp. levels were significantly higher ($P<0.05$) in the Natore area and lower in the Pabna district. The parasite infestation was most prevalent in Natore and lowest in Rajshahi. Rajshahi had substantially higher pH levels ($P<0.05$) than Bogura district. Meat moisture content was substantially greater ($P<0.05$) in Bogura district and lower in Rajshahi. Meat drip loss was non-significantly ($P>0.05$) higher in Bogura and lower in Pabna. Adulteration of meat is much higher ($P<0.05$) in Bogura and lower in Rajshahi district. Diseases had no significant effect on animals ($P>0.05$); Natore had the highest slaughter rate, while Rajshahi had the lowest. Meat colour and marbling fat are not significantly different ($P>0.05$), with Rajshahi having the highest levels and Natore having the lowest. To address present issues, the government and appropriate cattle sector authorities should take the necessary steps.

Keywords: Meat quality, butcher, microbial load

POSTER 28

Evaluation of poultry farmer's knowledge, attitude and practice (KAP) towards antimicrobial use (AMU) and antimicrobial resistance (AMR) in Bangladesh

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ABSTRACT

Antimicrobial resistance is the threat to human existence. This study evaluated poultry farmers' knowledge, attitude, and practice (KAP) in four districts in Bangladesh, including Dinajpur, Rangpur, Thakurgaon, and Jaypurhat. The study of 400 poultry farmers information was conducted between June 2023 to July 2024 using an organized questionnaire. The educational level below SSC was the highest in all four areas. Distance from farm to veterinary drug stores: 1-15 km. Antimicrobial resistance was known about by 21% of all farmers. Antibiotics have harmful effects on animals, about 34% known. Keep a record of using antibiotics for only 9% of poultry farmers. Farmers have to wait to sell the animal or eat meat/eggs after giving the animal medicine only 7%. The zoonotic disease-causing agents develop AMR in animals that are known about 3% of farmers. The primary reason for antibiotic use was reported by producers at about 97%. Follow guidelines/prescriptions while farmers administer antimicrobials about 23%. Farmers get prescriptions from veterinarians before they buy antibiotics about 69% of the time. 34% of farmers keep records of animal treatment. Thirty-seven percent of farmers agreed that irresponsible use of AMU results in irreversible loss of drug effectiveness. Vaccination can prevent the use of antibiotics. 48% of farmers agreed. Eighty-nine percent of farmers agreed that public awareness creation reduces the development of AMR. Only 38% of farmers had training on vaccination and treatment. The uses of antibiotics are ciprofloxacin 46%, gentamycin 28%, macrolide 21%, amoxicillin 24%, cephalosporins 05%, and others 3%. To solve current difficulties, the government and relevant poultry sector authorities must take the appropriate steps.

Keywords: Poultry, antimicrobial resistance, antibiotics

POSTER 29

Study on different poultry disease is prevalence at Savar and Dhamrai Upazilas of Dhaka district of Bangladesh

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ABSTRACT

This study was conducted to asses common poultry diseases occurring at Savar and Dhamrai Upazilas of Dhaka district of Bangladesh to know the disease pattern of poultry. A structural questionnaire was made and total of 300 farmers were interviewed. Data obtained from the questionnaire were analyzed using SPSS. Cases found Newcastle disease (10.85 %), Infectious bursal disease (17.43 %), colibacillosis (14.51 10%), omphalitis (10.14 %), salmonellosis (8.32 %), fowl cholera (6.11 %), aspergillosis (12.33 %), duck plague (13.16 %) and duck cholera (8.03 %). Disease prevalence was also recorded as 39.04 % among the age group of >2 - 8 weeks followed by 30.24 % among 0 - 2 weeks of age, 16.66% among >8 - 20 weeks of age and 13.39 % among >20 weeks of age. It was found that prevalence of poultry diseases was significantly highest in summer season (57.36 %) followed by rainy season (26.4 %) and winter (25.02 %). Cases were found at Savar and Dhamrai Upazilas veterinary hospital or diagnostic laboratory, Newcastle diseases (20.58%), coccidiosis (17.79 %), duck plague (16.39 %), infectious bursal diseases (17.68 %), Nonspecific pneumonia (11.49 %), non-specific enteritis (9.69 %), duck cholera (15.59 %), helminthiasis (14.19 %), nutritional deficiency (13.50 %) and aspergillosis (12.10 %). Age-wise disease prevalence was recorded as 16.26 % for 0 - 2 weeks, 60.38 % for >2 - 8 weeks, 21.22 % for >8 - 20 weeks and 9.96 % for >20 weeks. Prevalence of poultry diseases were significantly higher in summer (45.5 %) followed by rainy season (38.11 %) and winter (30.2 %).The study may help to know the prevalence of poultry diseases for the improvement of poultry production in Dhaka district of Bangladesh.

Keywords: Poultry diseases, prevalence, seasonality, diseases, epidemiology and public health

POSTER 30

Food safety challenges of meat industry in Bangladesh: Current status and future steps

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ABSTRACT

Food safety of meat industry in Bangladesh is a serious problem that affects consumer confidence, economic stability and public health. The study aimed to assess the pre and post-harvest food safety status of meat industry in Bangladesh and also suggested some necessary steps to ensure safe meat and meat products for consumers. To conduct the study a bibliographical research approach was implemented using electronic databases and platforms such as Ovid, PubMed, ResearchGate, Scielo, Scopus etc. to identify relevant papers, newspaper articles and reports. Additionally, a stakeholder consultation meeting was conducted to understand the current status of the meat industry in Bangladesh and explore potential future steps for improvement. Results: The study revealed some important concerns including, high levels of pathogenic and antibiotic contamination, unhygienic slaughtering and marketing practices, inadequate cold chain infrastructure, poor transport and storage facilities, use of adulterants and heavy metal contamination in meat and meat products. Furthermore, a lack of awareness among consumers and stakeholders was identified as a major contributor to contamination and foodborne illness. The study also underlined weaknesses in the legal frameworks, regulatory activities, and knowledge gaps among stakeholders. However, the finding suggests that a strong monitoring system, suitable regulatory agency interventions in the best coordinated manner, adequate technical knowledge of value chain actors and responsibility of those organizations may ensure safety of meat and meat products from production to consumption. By addressing the problems related to the food safety status of meat value chain, Bangladesh's meat industry will be able to comply with international safety standards, protecting consumers and ensuring the industry's sustainability.

Keywords: Food safety, meat industry, contamination, value chain, challenge, regulatory activities, future steps, Bangladesh

POSTER 31

Integrating food safety knowledge, attitude, and practices of street food vendors and its impact on microbial profiles of street-vended food (Chotpoti) in urban Bangladesh

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ABSTRACT

Street food vendors' lack of essential knowledge of hygienic food management resulting street foods continue to be a significant public health concern in Bangladesh. This study aimed to investigate street vendor's food safety KAP and Chotpoti's microbial profiles in urban Bangladesh. A structured questionnaire and face-to-face interviews were conducted with 420 street food vendors using a simple random sampling approach in all eight divisional cities of Bangladesh. Data were analyzed through binary logistic regression and chi-square tests in IBM SPSS and Microsoft Excel. Additionally, 70 Chotpoti samples collected from Mymensingh city underwent microbial profile analysis through cultural, morphological, biochemical, and molecular techniques. In later, antibiogram of the isolates were determined by disc diffusion method using various antibiotics. In this study, 77.67% participants demonstrated good knowledge, while 75.03% exhibited positive attitudes towards food safety and hygiene. However, poor food hygiene practices were observed in 54.98% of the participants. Cultural, morphological and biochemical analysis confirmed *E. coli* (74%), *S. aureus* (65%), *Salmonella* spp. (78.3%), *V. cholerae* (70%), and *Klebsiella* (54%). Highest total viable count of bacteria was $1.8x10^9$, *Escherichia coli* $5x10^8$, *Staphylococcus aureus* $4x10^8$, *Salmonella* spp. $1.9x10^8$, *Vibrio cholerae* $2x10^8$ and *Klebsiella* spp. $3x10^8$ cfu/gm. Among positive isolates, PCR detection rates were *E. coli* (96.8%), *S. aureus* (93.5%), *Salmonella* spp. (40%), *V. cholerae* (60%), and *Klebsiella* (90%). All isolates revealed multi antibiotic resistance (MAR). The study findings reveal that Mymensingh's street food (Chotpoti) serves as a reservoir for MAR bacteria, posing critical public health risks, exacerbated by vendors' inadequate hygienic practices.

Keywords: Street food, street vendors, KAP, AMR, food safety

POSTER 32

Efficacy of commonly used anticoccidials against cecal coccidiosis in Bangladesh

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ABSTRACT

The study was conducted to assess the efficacy of commonly used anticoccidials against cecal coccidiosis in Bangladesh. For each of the 3 experiments, a total of 112 coccidia free chicks of 12 day old were randomly divided into 7 groups of 16 chicks each. From day 12, birds of group 1 to 5 were treated with amprolium (0.6 gm/lit), maduramycin (5ppm), salphaclozine (2gm/lit), toltazuril (25mg/lit), and amprolium+salphaquinoxaline (0.6gm/lit) respectively, and continued seven-day post infection, while group 6 served as Infected Non-medicated Control (INC) group. Except group 7 (Non-infected Non-medicated Control), all individual birds were inoculated with $7.5x10^4$ sporulated *E. tenella* oocysts at day 14. The efficacy of experimented drugs was determined by Global index (GI) and expressed as percent $GI_{NNC.}$ Data obtained on various parameters were analyzed by Duncann Multiple Range Test and the differences among group means were considered significant at $P < 0.05$. In case of Mymensingh the percentage of GI for sulfaclozine was 33 indicating resistance, for Cumilla and Joypurhat the GI was 54 and 68 respectively, indicating partial resistance. The percentage GI for maduramycin was 68.42, 51.23 and 73.18 respectively indicating partial resistance. The percent GI for amprolium was 81.13, 81.55, and 80.31 respectively indicating good efficacy. The percentage GI for amprolium and sulphaquinoxaline was 68.42, 51.23 and 73.18 respectively indicating good efficacy. However, the percent of GI for toltazuril was 92.24, 90.84, and 92.22 respectively indicating very good efficacy, and showing best result among the experimented drugs.

Keywords: Efficacy, anticoccidials, cecal coccidiosis

POSTER 33

Study on pathological investigation of nitrate poisoning in a sheep farm

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ABSTRACT

Nitrate poisoning (toxicosis) in animals (especially ruminants) results from excess consumption of nitrates from plants or water or via ingestion of nitrate-containing fertilizers and cause significant mortality in case of acute poisoning. This study investigated a case of suspected nitrate poisoning in a sheep farm (n=106) of Muktagasa Upazilla, Mymensingh. The pathological investigation includes haematological examinations, gross and histopathology, and toxicological analysis. Affected sheep showed lameness, dyspnoea, anorexia, dullness, cyanosis of mucous membrane, and sudden death at a regular interval. A total of 17 sheep died within a short period of time. Necropsy of dead sheep showed mucosal discharges in oral and nasal cavities, congested and consolidated lungs, congestion in visceral organs, cyanotic blood and mucous membranes, greyish lesion on the medulla oblongata, widespread congestion and hemorrhages. Histopathological examination revealed tubulointerstitial nephritis, haemorrhages in brain, kidney, and liver, widespread congestion and fibrinous inflammation in lungs, lymphopenia in spleen, hemorrhagic enteritis indicating Peste des petits ruminants (PPR) viral infectivity. Routine blood analysis revealed a rise of total leukocyte count ($14\text{-}27x10^3\mu l$) but other parameters of blood like haemoglobin estimation, total red blood cell count, ESR were at standard level. Suspected grasses while tested with diphenylamine revealed higher concentration of nitrate (+++) and indicating a state of nitrate poisoning. Treatment with acetylcysteine through intravenous route and replacing grasses bringing significant clinical improvement and help surviving infected animals. This study highlights a combination of nitrate poisoning with subclinical PPR viral co-infectivity. Acetylcysteine appeared as a viable therapeutic option for treating nitrate poisoning in farm animals.

Keywords: Poisoning, nitrate, hemorrhages and congestion, acetylcysteine, PPRV

POSTER 34

Effects of acetaminophen (paracetamol) in chickens

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ABSTRACT

Drug induced liver injury is becoming a major concern in the globe. Acetaminophen (paracetamol) is extensively used both in human and veterinary medicine. However, reports of its toxicity in birds are very limited. Therefore, present study to investigate the effects of acetaminophen following acute toxicity in chicken. A total of 25 chickens were collected and randomly divided into control and acetaminophen-treated chicken (@2mg/kg BW) and observed day 1 - 7. The serum hepatic enzyme (ALT) was significantly increased in acetaminophen-treated chicken compared to control chicken, indicating liver injury. At necropsy, swollen kidney and small spotted hemorrhages were seen in treated thymus. Histopathologically, hepatic lesions comprised of coagulation necrosis and infiltration of lymphocytes and macrophages in centrilobular area and periportal areas including Glisson's sheath of liver. The severity of necrosis and number of infiltrated inflammatory cells were found sharply higher on day 1 to 3 and gradually decreased up to day 7. Acetaminophen has also detrimental effects on lymphoid organs in chickens. Particularly, destroy or depopulate the lymphocytes in the primary lymphoid organs (thymus and bursa of Fabricious). Interestingly, lymphocytic population was increased in the secondary lymphoid organs like spleen and MALT (cecal tonsil). In conclusion, it clear that, acetaminophen is detrimental to liver homeostasis and had adverse immune effects. Therefore, the present findings will provide a significant insight into the mechanisms of acute toxicity of acetaminophen on the basis of immune systems in chickens and may directly cause liver injury or act as a co-factor for other liver diseases.

Keywords: Acetaminophen, liver, toxicity, chickens

POSTER 35

Multidrug resistance profiles of clinical and environmental isolates of *Pseudomonas aeruginosa* and *Escherichia coli* with detection of virulence genes

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ABSTRACT

Pseudomonas aeruginosa and *Escherichia coli* possess an appreciable of virulence factors that may afford to its pathogenicity. This study aimed to evaluate virulence factors along with their profiling of multidrug-resistant genes using standard molecular and microbiological techniques. Clinically affected human, dairy, poultry, and environmental samples (92) were collected. Among them, 64 isolates of *Escherichia coli* 34 (53.12%) and *Pseudomonas aeruginosa* 30 (46.88%) were screened through selective culture, gram staining, and biochemical test. 39 (60.93%) isolates were found in clinical samples whereas 25 (39.06%) isolates were recorded in environmental samples respectively. Using genus-species-specific primers OprL genes in all isolates of *Pseudomonas* and some isolates possess exoS and LasB genes based on PCR amplification. Isolated *Escherichia coli* harboured a variety of virulence genes, eaeA, papC, and FimH were related to a variety of complications. Antimicrobial sensitivity test was performed according to the procedure Kirby-Bauer disk diffusion method. 20 multidrug resistance *Escherichia coli* were identified and showed resistance toward azithromycin 18/20 (90%), followed by cotrimetheoprim and amoxicillin & clavulanic acid 17 (85%), amoxicillin and ceftazidime 16 (80%), amikacin 14 (70%) Otherwise 18 multidrug resistance *P. aeruginosa* were showed high resistance to amoxicillin and cotrimetheoprim 17/18 (94.44%), followed by azithromycin, amoxicillin and clavulanic acid 16 (88.89%), amikacin 13 (72.33%) compared to other commercial antibiotics. The tetracycline-resistant TetA and Beta lactamases resistant gene blaTEM, blaSHV, and blaCMY genes were confirmed by polymerase chain reaction. Which gives us a clear message for upcoming future of our farm and hospital patients.

Keywords: *Pseudomonas aeruginosa,* multidrug-resistant, virulence genes, *Escherichia coli* and polymerase chain reaction

POSTER 36

Antimicrobial effect of *Moringa oleifera* on pathogenic MDR biofilm producing bacteria isolated from diabetic ulcer patient

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ABSTRACT

Diabetic ulcers, a serious complication of diabetes, are prone to infection due to patients' immunocompromised state. Multidrug resistance (MDR) complicates treatment. This study aimed to identify biofilm-producing MDR bacteria in diabetic ulcers, analyze their virulence genes, and evaluate the antibacterial effect of *Moringa oleifera* leaves.Forty pus samples were collected from diabetic ulcer patients at Diabetes O Swasthoseba Hospital, Dinajpur (January−December 2023). Bacteria were isolated using selective media, biofilm formation was confirmed on Congo red agar, and antibiotic susceptibility was tested using the Kirby-Bauer method. PCR detected virulence and antibiotic resistance genes, while *Moringa oleifera*'s antibacterial activity was assessed by diffusion method. A total of 52 bacterial isolates were obtained: *Escherichia coli* (38.46%), *Staphylococcus aureus* (34.61%), and *Pseudomonas aeruginosa* (26.92%). *E. coli* was 100% resistant to amoxicillin, erythromycin, levofloxacin, and tetracycline. *S. aureus* was fully resistant to methicillin, oxacillin, and erythromycin, while *P. aeruginosa* resisted erythromycin, tetracycline, and aztreonam. Virulence and resistance genes, including eaeA, fimH, TetA, blaTem, mecA, lasB, oprL, and exoS, were confirmed via PCR. *Moringa oleifera* extract demonstrated dose-dependent antibacterial activity. This study highlights the prevalence of MDR biofilm-producing bacteria in diabetic ulcers and suggests *Moringa oleifera* as a potential alternative treatment. However, further clinical research needed.

Keywords: Polymerase chain reaction, virulence genes, diabetic ulcers, biofilm, multidrug resistance

POSTER 37

Investigating the role of socio-demographic factors in shaping consumer attitudes towards food safety in Bangladesh: A cross-sectional study

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ABSTRACT

Food safety remains a major public health concern globally, with foodborne illnesses resulting in significant morbidity and mortality. In Bangladesh, food safety is compounded by challenges such as poor infrastructure, weak regulatory systems, and low public awareness. The increase in foodborne diseases, especially in urban areas, calls for an investigation into consumer attitudes and practices regarding food safety. This study aims to examine the influence of socio-demographic factors (age, gender, education, income, occupation, household size) on consumer attitudes toward food safety and to assess the level of knowledge and awareness about food safety practices among consumers in Bangladesh. A cross-sectional survey was conducted between October and December 2024, targeting food consumers across 19 districts in Bangladesh. Data were collected using semi-structured questionnaires through face-to-face interviews. A total of 511 participants were included in the study. Data analysis involved descriptive statistics, multivariate logistic regression, and multinomial logistic regression to determine predictors of food safety attitudes and knowledge. The study found that education level significantly influenced food safety attitudes ($p = 0.002$). However, factors like age, gender, and income had no significant impact. A lack of knowledge about foodborne pathogens, such as Hepatitis A, was also prevalent among respondents, highlighting gaps in food safety awareness. Consumer education is crucial for improving food safety practices. Policy interventions should focus on enhancing public knowledge, particularly among vulnerable populations, to reduce foodborne diseases in Bangladesh.

Keywords: Food safety, awareness, practice, Bangladesh

POSTER 38

Isolation and antibiotic resistance profiling of *Klebsiella* spp. in sugarcane juice from street vendors in Mymensingh city

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ABSTRACT

Sugarcane juice is a popular, nutrient-rich beverage known for its health benefits, including hydration and disease prevention. However, its contamination by multidrug-resistant (MDR) bacteria, especially *Klebsiella* spp., presents a serious public health concern. This study aimed to isolate and antibiogram profiles of *Klebsiella* spp. from fresh sugarcane juice obtained from street vendors in Mymensingh city. A total of 50 sugarcane juice samples were collected from five locations: KR Market, Jobbarer Mor, Shes Mor, Bridge Mor, and Ganginar Par. Morphological analysis via Gram's staining and culture on EMB agar identified *Klebsiella* spp. in 10 samples, and biochemical tests confirmed 7 positive isolates. The bacterial load ranged from 5.17 to 7.40 log CFU/ml, with a mean of 5.88 ± 0.64 log CFU/ml. Antibiotic susceptibility testing revealed that all 7 isolates were 100% sensitive to Ampicillin. Chloramphenicol, Tetracycline, and Cefotaxime also showed effectiveness, while 66.67% of isolates were sensitive to Ciprofloxacin, and 33.33% exhibited intermediate resistance. Notably, all three MDR isolates were identified. This study underscores the presence of antibiotic-resistant *Klebsiella* spp. in sugarcane juice, highlighting the urgent need for improved hygiene, food safety monitoring, and vendor education to mitigate the risk of spreading MDR bacteria.

Keywords: Sugarcane juice, *Klebsiella* spp., multidrug-resistant, antibiotic resistance, food safety

POSTER 39

Isolation, identification and characterization of antibiotic-resistant bacteria from chicken meat: An implication for food safety

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ABSTRACT

Chicken meat is a good source of animal protein. The existence of antibiotic resistant bacteria in chicken meat is an emerging public health concern. The current study focused on isolation, identification and characterization of antibiotic resistant bacteria from chicken meat. Total 120 chicken swab samples were collected. After collection, the samples were enriched in nutrient broth and cultured in Eosin Methylene Blue (EMB), Thiosulfate Citrate Bile Salt Sucrose (TCBS), Mannitol Salt, Salmonella-Shigella (SS) and Blood agar. Identification of *Escherichia coli, Vibrio cholerae, Staphylococcus aureus, Salmonella* spp. and *Campylobacter* spp. were performed by Gram's staining followed by biochemical tests and molecular detection was achieved through PCR. In later, antibiogram of the isolates were determined by disc diffusion method using various antibiotics. Finally, antibiotic resistant genes were determined. Cultural, morphological and biochemical characteristics showed 80% isolates positive for *E. coli,* 76.7% for *Staphylococcus aureus,* 78.3% for *Salmonella* spp., 65% for *Vibrio cholerae* and 90% for *Campylobacter* spp. Among the positive isolates 95.8% detected positive for *E. coli,* 93.5% for *S. aureus,* 40% for *Salmonella* spp., 70% for *Vibrio cholerae* and 96% for *Campylobacter* spp. through PCR. All the positive isolates showed 100% antibiotic resistance to amoxicillin and sensitive to ciprofloxacin, azithromycin and amikacin; except *Campylobacter* spp. to gentamicin. Multi antibiotic resistant genes were found in all isolates. The findings specified that chicken sold in the markets in Mymensingh district could harbor multi antibiotic resistant (MAR) bacteria that likely to threaten of public health as well as highlighting significant concerns for food safety.

Keywords: Chicken meat, multi antibiotic resistance, antibiotic resistance gene, food safety

POSTER 40

Emergence of genotype XIII Newcastle disease virus in chickens in Bangladesh: A major constraint for poultry production and food security

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ABSTRACT

Poultry play a vital role in food security, providing meat, eggs and income from sales. The most economically devastating infectious disease affecting Bangladesh's poultry industry is Newcastle disease (ND). The research aimed to pathotype, genotype and assessment of cytopathic effect (CPE) of ND virus (NDV) circulating in chickens at Gazipur, Tangail and Mymensingh districts in Bangladesh during May 2023 - August 2024. Total 63 ND suspected samples (lung, trachea and caeca tonsil) were collected and 10-12 days old embryonated chicken eggs (ECEs) were injected with the inoculums of RT-PCR positive 25 NDV samples through allantoic cavity. Post 24 hours, the allantoic fluids were collected and NDV identity was performed by Hemagglutination (HA) and RT-PCR. The pathotype was determined by Mean Death Time (MDT), Intracerebral Pathogenicity Index (ICPI) and complete F gene sequences and the genotype by phylogenetic analysis. Subsequently, the CPE was assessed through culture in chicken embryo fibroblast cells (CFC). 7 isolates (28%) from ECEs out of 25 samples were verified as NDV through HA, and RT-PCR. The MDT (<60 hours), ICPI (>1.5) and complete F gene sequences` cleavage site "RRQKRF" indicated that the NDV isolates were velogenic strain. Phylogenetic analysis demonstrated that the isolates were genotype XIII. In CFC culture, the cell became rounded, detached and multi-nucleated after 48 hours of NDV infection. The study revealed that the velogenic strains of genotype XIII NDVs are circulating among the poultry population in Bangladesh triggering death of chickens which is a major threat to poultry production and food security enhancement.

Keywords: NDV, velogenic strain, genotype XIII, cytopathic effect, food security

POSTER 41

Concurrent infection of hemorrhagic septicemia with foot and mouth disease: A major constraint to livestock health, productivity and food security

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ABSTRACT

Livestock play an important role on food security, providing meat, milk and income from sales. The most economically devastating infectious diseases affecting Bangladesh's livestock sector are Foot and Mouth Disease (FMD) and Hemorrhagic septicemia (HS) that reflect on livestock health, productivity and food security in Bangladesh. This study aimed to investigate the concurrent infection of HS with FMD in cattle in Bangladesh between March and December 2023. Total 102 samples (nasal swab, saliva, tissue epithelium, and morbid tissues) from 50 cattle showing clinical signs of suspected concurrent HS and FMD infection were collected. After sample processing, molecular detection of FMDV and its serotypes was performed using RT-PCR and partial sequencing. The HS-causing agent, *Pasteurella multocida* type B:2, was initially identified through cultural, morphological, biochemical characteristics, and pathogenicity tests through inoculation of isolates into mice. Finally, molecular detection was confirmed through PCR and partial sequencing. Forty-five (83%) of the 54 FMD suspected samples tested positive for FMDV, with 53% positive for serotype 'O,' 17% for serotype 'A,' and 6% for mixed serotypes 'O' and 'A.' Among FMDV-positive samples, 17 (38%) of the HS-suspected samples tested positive for concurrent infection with *Pasteurella multocida* type B:2. Partial sequencing confirmed the FMDV serotype O, A and *Pasteurella multocida* type B:2 isolates. The study reveals that FMDV-induced acute immunosuppression in cattle can lead to complications from concurrent infections, particularly caused by *Pasteurella multocida* type B:2, resulting in HS alongside FMD which is a major constraint to livestock production and alarming for food security promotion.

Keywords: FMD, immunosuppression, concurrent infection, hemorrhagic septicemia, food security

POSTER 42

Bacteriological assessment of tilapia fish cultured in conventional and model setting ponds in Mymensingh

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ABSTRACT

To evaluate microbial assessment between traditionally and controlled environmentally cultivated Tilapia *(Oreochromis niloticus)* for safe fish production. For this, model pond was setting accordingly to produce collect (n=25) the fishes. The traditional fishes (n=25) were collected from local market. The Flesh, Gills, and Intestine from each fish were collected aseptically and subjected to assess TVC, TSC and TCC, TStC. The *E. coli, Salmonella* spp., *Aeromonas* spp., *Pseudomonas* spp., *Edwardsiella tarda,* and *Staphylococcus aureus* were isolated and identified through conventional PCR. Antibiogram of the confirmed isolates were performed by PCR detection of antibiotic resistance gene. The mean values and standard deviations of TVC, TCC, TSC and TStC in fishes collected from model pond were 4.60±0.22, 3.9610±0.179, 0.6450±1.361, 3.5460±0.215 log CFU/g while 6.08±0.18, 5.1275±0.146, 1.3945±2.115, and 4.56763±0.345 were from conventionally cultured market fishes respectively. Among the 75 sampled from model pond fishes, 21.33%, 10.67%, 21.33%, 14.66%, and 6.66% were positive for *E. coli, Salmonella, Aeromonas* spp., *Pseudomonas* spp. *E. tarda* while form traditional fishes, 45.33%, 21.33%, 37.33%, 24%, 13.33%, and 41.33% were positive for same bacteria respectively. Whereas 28% *Staphylococcus aureus* was positive only from traditional fishes. The antibiogram result revealed the highest resistant 61.11% was for *Pseudomonas* spp. and the lowest 6.25% for *E. coli* to blaTEM gene. Additionally, tetA showed the highest resistant 50% for *E. tarda* and lowest 23.52% for *E. coli.* As compared to that of conventional ponds Model-setting Pond produces safer fish.

Keywords: Model-setting, conventional, TVC, antibiogram

POSTER 43

The bioremediation potential of *Eisenia fetida* and *Eudrilus eugeniae* in cadmium and copper polluted cow dung

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ABSTRACT

An experiment was conducted from March to November 2024 at the vermicompost shed and laboratory of the Department of Soil Science, Sylhet Agricultural University, to see the bioremediation potential of earthworms through vermicomposting from cow dung. Two factors, where A- comprised of two earthworm species viz., *Eisenia fetida* and *Eudrilus eugeniae;* and B- different cadmium and copper concentrations viz., i) control (natural presence of Cd and Cu in cow dung), ii) Cd (0.15 mg kg^{-1}), iii) Cu (5 mg kg^{-1}), iv) Cd+Cu (0.15+5, mg kg^{-1}) employed CRD with three replications. Twenty-five earthworms were released into 500 g of cow dung in each bowl. The moisture level of cow dung was maintained between 60-80%. Data were recorded on the number of earthworms, cocoons, hatchlings, length, biomass, cadmium and copper contents in the earthworm's body. The vermicompost weight, its physical and chemical properties changes were also recorded. The result showed that the vermicompost was dark brown, ammonia off-odour, non-granular and not sticky. The highest number of earthworms, cocoons and hatchlings, were 26.83, 41.83 and 88.17 $bowl^{-1}$ found in control, respectively. Earthworm length (9.78 cm), biomass (12.32 g $bowl^{-1}$), and vermicompost weight (282.74 g $bowl^{-1}$) were the highest in the control. The highest concentrations of Cd and Cu (0.068 and 4.694 mg kg^{-1}) were found in the earthworm's body in Cd+Cu (0.15+5, ppm) treatment, whereas the lowest Cd (0.133 mg kg^{-1}) and Cu (6.565 mg kg^{-1}) were recorded in vermicompost in the control. *E. fetida* and *E. eugeniae* showed statistically similar performance in case of the Cd and Cu accumulated in their bodies. The result indicated that earthworms would reduce Cd and Cu contents from cow dung and keep the environment from hazardous compounds.

Keywords: Cadmium, copper, *Eisenia fetida, Eudrilus eugeniae*

POSTER 44

Application of duck plague vaccine to produce safe duck egg and meat

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ABSTRACT

Duck Plague (DP), caused by Anatid herpesvirus-1, is a highly contagious and fatal disease affecting domestic and wild ducks. Veterinarian use antibiotics to treat affected ducks, resulting development of antibiotic resistance bacterial species which transfer to human. This study evaluates the impact of the Duck Plague Vaccine (DPV) on the safety and quality of duck egg and meat. A field-based (200 nos duckling) vaccination trial was conducted using an Inactivated DPV in a commercial duck population. Vaccinated (G-100) and non-vaccinated(C-100) groups were monitored for growth rate, feed intake, clinical signs, mortality, antibody response, and virus shedding. In vaccinated group, all ducklings (G-100) exhibited a normal feed intake and growth rate, indicating a standard physiological response to the given diet and environmental conditions. Furthermore the vaccinated group was clinically healthy & acquired protective immune response confirmed by ELISA. Sera were collected 14^{th}, 21^{th} & 28^{th} day post vaccination. One month later of 1^{st} vaccination, booster vaccination was performed & sera were collected 14^{th}, 45^{th}, 60^{th} day post vaccination. Antibody titers (OD value) of collected sera on 14^{th}, 21^{th} and 28^{th} day post vaccination were 0.1694, 0.3606 and 0.4274 respectively while cut off value was 0.2120. Antibody titers of sera on 14^{th}, 45^{th} and 60^{th} day post-booster vaccination were 0.8398, 0.8708 and 0.9864 respectively while cut off value was 0.2437. The findings represented that application of DP vaccine not only develops protective antibody titer, also reduces the morbidity and mortality also mitigates AMR bacteria development and producing safe meat and egg production.

Keywords: Duck Plague Vaccine, food safety, duck eggs, duck meat, AMR

POSTER 45

Safe broiler production through prevention of inclusion body hepatitis virus infection

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ABSTRACT

Inclusion Body Hepatitis (IBH) is a significant challenge in broiler production, leading to high mortality rates, poor growth performance, and economic losses. The disease, caused by Fowl Adenovirus (FAdV), is widely reported in poultry-producing regions, including Bangladesh. Farmers often resort to antibiotic use to manage secondary bacterial infections associated with IBH, contributing to antimicrobial resistance (AMR), which poses serious public health concerns. To ensure sustainable poultry farming, alternative strategies focusing on prevention rather than treatment are crucial. Recent studies have identified IBH virus strains prevalent in Bangladesh, including FAdV-E (serotype 8b) and FAdV-D (serotype 11). Molecular techniques, such as Polymerase Chain Reaction (PCR) targeting the hexon and polymerase genes, have facilitated accurate virus identification. This knowledge is instrumental in the development of an inactivated IBH vaccine using locally isolated virus strains. A targeted vaccination program can significantly reduce IBH outbreaks, improving broiler health and minimizing production losses while decreasing the need for antibiotics. Reducing antibiotic dependency in broiler farming aligns with global efforts to combat AMR. Implementing IBH vaccination programs, combined with enhanced biosecurity measures and proper farm management, can lower disease incidence and improve poultry welfare. Preventive vaccination not only enhances the safety of broiler meat for consumers but also supports sustainable poultry production. The development and widespread use of an IBH vaccine will contribute to the long-term economic viability of the poultry sector, ensuring a steady supply of healthy broilers while mitigating the risks associated with excessive antibiotic use.

Keywords: IBH, AMR, PCR, FAdV, hexon

POSTER 46

Farmers' perceptions and management strategies for banana (*Musa* spp.) insect pests and diseases in Bangladesh

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ABSTRACT

Banana (*Musa* spp.) is a widely cultivated fruit in Bangladesh, significantly affected by insect pests and diseases. Future applications of biotechnology in banana may help address various production challenges. To evaluate management practices, a detailed survey was carried out among 150 banana farmers across five districts in Bangladesh. The survey findings indicate that farmers could identify several major pests in their fields, with banana leaf and fruit scarring beetle, banana rhizome weevil, and banana pseudostem weevil being commonly observed across all surveyed areas. More than 90% of farmers stated that their banana plants were severely affected by panama disease and sigatoka disease. Farmers reported that insect pests mostly caused 10-19% yield loss (37.3%), while diseases led to higher losses, with 30% experiencing 40-49% loss. About 73% of the farmers solely relied on chemical pesticides for banana production, while 27% used a combination of chemical and non-chemical methods. Farmers relied on insecticides from the synthetic pyrethroid and organophosphate groups, along with fungicides from the Triazole group, to control pests and disease. Farmers applied pesticides during the vegetative stage (69.0%), with most following intervals of >15 days (38.1%), maintaining 21-30 day pre-harvest interval (PHI). Farmers are frustrated with pest and disease attacks, and 100% farmers prefer cultivating resistant varieties to minimize these issues. When asked about tissue culture, 42.7% of farmers reported being aware of it, while majority (57.3%) were unfamiliar with this. Our findings highlight the necessity of developing sustainable strategies for managing pests and diseases in banana cultivation in Bangladesh.

Keywords: *Musa* spp., banana, field Status, sustainability, food Security

POSTER 47

Addressing the hidden health crisis of packaged food: A pathway to climate-resilient food safety and health

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ABSTRACT

Public health is seriously threatened by the rising consumption of packaged foods, which is fueled by convenience and urbanization, especially in developing nations like Bangladesh. This study looks at how packaged food affects health, with a particular emphasis on how it contributes to the growth in diabetes, obesity, and heart disease. We examine the influence on nutritional health of the transition from traditional diets to contemporary, processed meals. The economic cost of diet-related illnesses is also highlighted in the study, as is the necessity of government control, industry reformulation, and consumer education. We suggest a way to enhance food safety and health by combining these tactics, which is consistent with the subject of climate-resilient food security and safety.

Keywords: Packaged Food, health crisis, obesity, diabetes, climate-resilient food security

POSTER 48

Foodborne *Staphylococcus aureus* in southern Bangladesh: Public health risks and the potential of natural flavonoids as adjunctive antimicrobials

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ABSTRACT

This study meticulously examined the prevalence of *Staphylococcus aureus* within food samples procured from Jashore, Bangladesh, while simultaneously exploring prospective plant-derived therapeutic alternatives. A total of 40 samples, encompassing raw milk, poultry meat, cake, biscuit, and laddu, were collected during the period extending from September 2024 to January 2025. Phenotypic and molecular analyses unveiled a 100% prevalence of *S. aureus*, with the amplification of the nuc gene evaluated to confirm the identification at the molecular level. The non-traditional antibiogram investigations using the disc-diffusion method indicated an intermediate sensitivity to levofloxacin, which holds the potential for the eradication of *S. aureus* isolates within Bangladesh. Through the molecular docking analysis of 1294 flavonoids with the specifically targeted PBP2a and SrtA proteins of *S. aureus*, we discovered Genistin (CID-5281377) as a promising dual-action therapeutic candidate, exhibiting binding affinities that are comparable to that of vancomycin (control). The ADMET analysis revealed favorable drug-like characteristics for the leading compounds, all conforming to Lipinski's rule of five without exhibiting AMES toxicity. Molecular dynamics simulations conducted over a period exceeding 100 ns substantiated stable protein-ligand interactions, with RMSD values ranging from 1.5-5.3Å. These findings underscore the significant food safety concerns present in Bangladesh while simultaneously identifying potential natural therapeutic adjuncts with antimicrobial properties to address antibiotic-resistant *S. aureus* strains. The study emphasizes the imperative for enhanced food safety protocols while providing promising solutions through innovative associated antimicrobial compounds.

Keywords: *Staphylococcus aureus*, flavonoids, NUC, PCR, molecular docking, molecular dynamic simulation

POSTER 49

Evaluation of the antibacterial potential of mango (*Mangifera indica*) seed kernels in Bangladesh

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ABSTRACT

Antimicrobial resistance is a global threat. On the other hand, Bangladesh produces high-quality mangoes, yet the mango coat and seed kernel, which contain medicinal components, remainunused. Therefore, this study investigated the antibacterial potential and toxicity of ethanol extracts from mango (*Mangifera indica*) seed kernels, specifically targeting the bacterial strains *Staphylococcus aureus*, *Bacillus cereus*, *Escherichia coli*, and *Klebsiella* sp. Amrapali variant mango seeds were collected, dried, ground into a fine powder, and extracted with ethanol at various ratios. The efficacy of the crude extract was tested using the disc diffusion method. The results demonstrated significant antibacterial activity against gram-positive bacteria (*S. aureus and B. cereus*), with clear zones of inhibition observed, especially in a dose-dependent manner. The pure crude extract inhibits the growth of *S. aureus* with a zone of 23 mm, identical to that produced by doxycycline. However, the extract exhibited limited activity against gram-negative bacteria (*E. coli* and *Klebsiella* sp.). Additionally, the extract was effective against multidrug- resistant *S. aureus*. The pure crude extract produced a 22.5 mm zone of inhibition against multidrug-resistant *S. aureus*, which is slightly smaller than that of gentamicin (23 mm) but larger than those of chloramphenicol (21 mm), vancomycin (20 mm), and tetracycline (16 mm). In vivo toxicity was assessed in mice, revealing no significant adverse effects on the hepatic structure or renal cortex at lower doses (100 μL of pure crude extract). However, higher doses caused mild histopathological changes in the liver and kidneys. These findings suggest that mango seed kernel extract holds promise as an alternative antibacterial agent, particularly against gram-positive and antibiotic-resistant bacteria, while being relatively safe at lower doses. Further research is needed to elucidate the active compounds, mechanisms of action, and broader applications of this extract in combating antibiotic-resistant bacterial infections.

Keywords: Mango (*Mangifera indica*), seed kernel, ethanol extraction, antimicrobial activities, AMR

POSTER 50

Bio-rational management of Alternaria leaf spot of mustard using beneficial bacteria

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ABSTRACT

The present study was aimed to use previously isolated and identified beneficial bacteria viz. *Bacillus cereus* HSTUB 17, *Serrartia marcescens* HSTUB 8, and *Enterobacter tabaci* HSTUB 20 for the eco-friendly management of Alternaria leaf spot of mustard in field condition. Among the selected bacteria, the combined appliecation of *B. cereus* HSTUB 17 and *E. tabaci* HSTUB 20 exhibited the highest reduction of Alternaria leaf spot incidence (82.35 and 79.98%) and Alternaria leaf spot severity (81.50 and 80.95%) in BARI shorisha 14 and BARI shorisha 18 over control at 90 days after sowing (DAS), respectively. The highest plant height (140.67 and 68.33 cm), number of leaves per plant (42.67 and 40.00), leaf length (21.00 and 10.67 cm), leaf width (17.00 and 8.00 cm), total number of flowers per plant (53.00 and 24.00), number of pods per plant (286.00 and 154.67), shoot length (142 and 70.33 cm), root length (16.67 and 9.00 cm), shoot weight (35.00 and 3.65 g), root weight (9.42 and 0.51 g), pod length (7.67 and 6.67 cm), pod weight (0.34 and 0.28 g), seed weight g/1000 seeds (2.46 and 2.67 g), germination (96 and 96 %) were obtained by the combined application of *B. cereus* HSTUB 17 and *E. tabaci* HSTUB 20 in both BARI shorisha 14 and BARI shorisha 18, respectively. The findings of the study revealed the potentiality of *B. cereus* HSTUB 17 and *E.tabci* HSTUB 20 for sustainable eco-friendly management of Alternaria leaf spot disease of mustard along with the enhanced production.

Keywords: Mustard, Alternaria leaf spot, *Serrartia*, *Enterobacter*, eco-friend

POSTER 51

Foot and mouth disease in cattle in Bera Upazila of Pabna district, Bangladesh: A food security concern

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ABSTRACT

Foot-and-mouth disease (FMD) is a highly contagious, hyper-endemic and economically most dangerous viral disease of both domestic and wild cloven-hoofed animals, caused by Foot and Mouth disease virus (FMDV). This research was mainly focused on molecular detection and characterization of FMDV directly from the recent outbreaks of FMD in cattle in Bera upazila under Pabna district in Bangladesh from April 2024 to September 2024. A total of 49 samples (saliva and tongue epithelium) were collected from FMD-suspected cattle. The samples were then processed for RNA extraction followed by Reverse Transcription Polymerase Chain Reaction (RT-PCR) using universal and serotype (O, A, Asia 1) specific primers. For confirmation, partial sequencing of vp1 gene of the FMDV serotype O positive isolate was conducted. After that phylogenetic tree was constructed and analyzed. Total 27 (55%) out of 49 field samples were positive for FMDV. Among 27 FMDV-positive samples, 11 (41%) were positive for serotype O and no positive results were found for serotype A or Asia 1 in the remaining samples. Partial sequencing, and phylogenetic tree analysis demonstrated that the sequenced isolate SS-BAU375 was closely related (95-96%) to the FMDV serotype O isolate of Pakistan and Saudi Arab. Based on the result found by RT-PCR, partial sequencing, and phylogenetic tree analysis, it can be concluded that FMDV serotype O was circulating in the cattle population of Bera Upazila under Pabna district in Bangladesh resulting low productivity in meat and dairy production which is a concern issue towards food security of animal protein in Bangladesh.

Keywords: FMD, serotype O, sequencing, phylogenetic tree, food security

POSTER 52

Effects of dietary monosodium glutamate (MSG) on growth performance, blood profile, and histopathology of vital organs of Swiss albino mice

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ABSTRACT

Monosodium glutamate (MSG) is widely used as a flavor enhancer in processed foods, yet concerns persist regarding its potential adverse health effects. Due to lack of comprehensive evidence, the aim of the study was to investigate the impact of dietary MSG on growth performance, blood profile, and histopathological changes in vital organs of Swiss albino mice. A total of 72 male Swiss albino mice were divided into four groups with three replications and 6 mice in each group. A dietary MSG were supplied in T0-0mg, T1-10mg, T2-20mg and T3-40mg per litre drinking water over 60 days. A completely randomized design and one-way ANOVA followed by Tukey's test using IBM SPSS Statistics 2025, were used to analyze the data. The effect of MSG on body weight was significantly lower in T3 followed by T2, and T1 compared to control group ($p < 0.05$). However, MSG exposure was associated with increased white blood cell counts, whereas decreased red blood cell counts, and elevated triglyceride levels. Histological examination showed structural damage in liver, kidney, and testicular tissues, were higher in T3 followed by T2 and T1 compared to control group. These findings suggest that prolonged MSG intake negatively affects weight, hemato-biochemical changes, and organ-specific toxicity. The study underscores the need for further research on the long-term health risks of MSG consumption and potential dietary guidelines to mitigate its harmful effects.

Keywords: MSG, body weight, hematology-biochemical parameters, histopathology, mice

POSTER 53

Effects of long-term consumption of vegetable oils in rabbit: A health perspective study

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ABSTRACT

Vegetable cooking oils are essential to the human diet, however, long term cooking sometimes causes thermal oxidation and become harmful for health. This study investigated the changes in clinico hematological, biochemical and histopathological parameters in rabbits treated with different vegetable oil by Chemistry Analyser. Thirty experimental rabbits were divided into 6 groups; Group A: control (CON), Group B: soybean oil (SBO) treated, Group C: palm oil (PO) treated, Group D: mustard oil (MO) treated, Group E: rice bran oil (RBO) treated and Group F: sunflower oil (SFO) treated. The vegetable oils were administrated orally at the rate of 2 ml/kg/day. The study found that heated oil treatment led to an increase in glucose and cholesterol levels. Total protein levels increased in the RBO and SBO treated groups, while decreased in MO, PO, and SFO treated groups. Serum albumin, globulin, ALT and AST levels were also increased in all the treated groups. Creatine and BUN levels were altered significantly and slight damage to liver and kidney tissues were observed including congestion, necrosis, hepatocyte dysplasia, steatosis, vacuolation, inflammation, glomeruli atrophy, edema of lining epithelial cells and glomerulosclerosis. However, damage to liver and kidney was moderate when using soybean, palm and mustard oils. In conclusion, the experiment recommends superiority of sunflower oil then other vegetable oils for daily consumption which will cause low thermal oxidation.

Keywords: Vegetable oils, cooking oils, consumption, effects, health, diet

POSTER 54

Hazardous effects of mosquito repellent liquid vapor on vital organs of adult male rabbits (*Oryctolagus uniculus*)

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ABSTRACT

The toxicity of insecticides for non-target organisms is of worldwide concern: insect repellents are silent environmental chemical toxicants to human health. The present study was designed to evaluate the toxicity of mosquito repellent liquid vapor (Good knight® Power Activ+, 1.5% dimafluthrin) exposure in the vital organs of adult male rabbits by analyzing serum biochemistry and morphological study of targeted organs (lung, liver, heart and brain). The group of mosquito repellent exposure rabbits (n=5) received 4 hours of liquid vapor every day at night for up to 30 days. Control rabbits (n=5) free from mosquito repellent exposure. No clinical sign appeared during exposure and no gross lesion was found in vital organs. Interestingly, the hepatic enzymes AST and ALT levels were significantly increased in mosquito repellent vapor-exposed rabbits. Histopathologically, the lung showed numerous granulomatous inflammation with infiltration of the inflammatory cells around the terminal bronchiole. In the liver, coagulation necrosis with infiltration of the inflammatory cells in the portal area and no lesion in the central vein area were seen. Infiltration of the inflammatory cells within the cardiac muscle were seen. In the brain, the accumulation of inflammatory cells around the blood vessels were seen. Therefore, mosquito repellent liquid vapor affect the body's homeostasis and produce toxicity in the vital organs of adult male rabbits. In conclusion, exposure to mosquito repellent liquid vapor may cause adverse effect on vital organs of mammals. Clear instruction leaflets on mosquito repellent liquid vapor usage to the public are imperative.

Keywords: Mosquito repellent liquid vapor, dimafluthrin, histopathology, vital organs, rabbits

POSTER 55

Mesenteric lymphnodes of goats found to carry zoonotic pathogen *Corynebacterium pseudotuberculosis* at higher rate; There may be a link between sick liver and infectivity

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ABSTRACT

Caseous lymphadenitis (CLA), caused by *Corynebacterium pseudotuberculosis* is a neglected zoonosis of small ruminant's origin. This study address the incidence of *C. pseudotuberculosis* in slaughtered ruminants of Mymensingh and Kishoreganj districts (2020 to 2024). A total of 348 samples (mesenteric lymph nodes, liver, spleen) from 228 cattle, sheep and goats were collected and identify *C. pseudotuberculosis* by using necropsy, Hematoxylin and eosin and Gram's staining, and polymerase chain reaction (PCR). Examination of animals at slaughter revealed caseous nodules in the liver (n=05), kidneys (n=02) and spleen (n=01) of goats, dystrophic calcification and caseous necrosis in mesenteric lymph nodes (MLNs) of cattle (n=03), sheep (n=01) and goats (n=92). Associated lesions in suspected animals were hemorrhages in spleen (n=05), icteric liver (n=07), swollen MLNs (n=116), pipe-stem liver (n=157), hydatid cysts (n=04), and cirrhosis (n=69). Histopathological examination divulged caseous necrosis in MLN of 109 animals. Gram-positive Chinese letter shaped bacteria was seen in MLNs of 96 animals. The causative agent was confirmed by amplifying fragment of 16S rRNA gene (632bp) of *C. pseudotuberculosis* in PCR. This study identified 27.63% incidence of CLA in slaughtered animals (63 out of 228) with 59 cases in goats, 03 in cattle and 01 in sheep and liver of these animals were sick. Histopathology and PCR have demonstrated their effectiveness in detecting CLA. *C. pseudotuberculosis* is a silent zoonosis in human and may gain infection from food animal sources. It needs to identify the relation between sick liver and infectivity in goats and therefore, addressing the zoonotic perspective.

Keywords: Caseous lymphadenitis, necropsy, histopathology, PCR, goats

POSTER 56

Utilizing ATR-FTIR spectroscopy coupled with chemometrics for detecting and quantifying palm oil in adulterated ghee from Bangladesh

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ABSTRACT

Ghee is the most valuable and expensive fat consumed in Bangladesh, which is often adulterated by cheaper fats like palm oil. For this purpose, a rapid and non-destructive attenuated total reflectance-fourier transform infrared (ATR-FTIR) spectroscopic method was developed for the detection and quantification of palm oil concentration in adulterated ghee. Palm oil was spiked in different concentration (1% to 50%) with ghee and spectra was recorded within the range 4000-400 cm^{-1}. The orthogonal partial least squares-discriminant analysis (OPLS-DA) and orthogonal partial least squares regression (OPLS) model was built in selected range (1180-1140 cm^{-1}; and 1120-1085 cm^{-1}) to discriminate and quantify pure and adulterated ghee. The OPLS-DA model's correct classification rate of external prediction were found 97.73%, which revealed good performance. Additionally, OPLS calibration model exhibited high R^2X (cum), R^2Y (cum) and Q^2 (cum) values of 0.994, 0.984 and 0.967 respectively. This model was further validated by lower root mean square error of estimation (RMSEE) and root mean square error of prediction (RMSEP) values of 2.179 and 2.770 individually. Finally, ATR-FTIR with chemometric technique could be a viable solution for rapid detection and quantification of palm oil concentration in adulterated ghee.

Keywords: Adulteration, ghee, ATR-FTIR, chemometrics, Bangladesh

POSTER 57

Rapid and non-destructive method development by ATR-FTIR spectroscopy with chemometric analysis for the determination of black pepper adulteration with papaya seeds from Bangladesh

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ABSTRACT

Black pepper is a valuable spice with a complex trade network which makes it a target for adulteration with cheaper bulking materials like papaya seeds. In this experiment, a rapid and non-destructive method was developed for the determination of papaya seeds adulteration in black pepper based on attenuated total reflectance-fourier transform infrared (ATR-FTIR) spectroscopy with chemometric analysis. For this purpose, black pepper samples were adulterated with papaya seeds in various concentrations ranging from 1% to 40% and analyzed using ATR-FTIR over the 4000-400 cm^{-1} range. The fingerprint spectral region 1800-900 cm^{-1} was able to successfully differentiate and quantify between pure and adulterated black pepper samples using orthogonal partial least squares discriminant analysis (OPLS-DA) for classification and orthogonal partial least squares (OPLS) for quantification. The prepared OPLS-DA model obtained 100% correct classification rate. The ideal OPLS calibration model showed excellent results (R^2Y= 0.981, Q^2 = 0.972), with minimal errors. Finally, this developed method has led to the establishment of a new alternative procedure for rapid and efficient quality control of black pepper.

Keywords: Adulteration, ATR-FTIR, chemometrics, black pepper, papaya seeds

POSTER 58

Palm oil detection and quantification in adulterated mustard oil from Bangladesh using ATR-FTIR spectroscopy with chemometric model

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ABSTRACT

Adulteration of mustard oil, with cheaper substitutes like palm oil poses significant economic concerns in Bangladesh. Traditional analytical techniques for detecting adulterated mustard oil are often time-consuming, labor-intensive, and require extensive chemicals. Therefore, this study aims to develop a rapid and eco-friendly method for identifying and quantifying palm oil adulteration in mustard oil available in the Bangladeshi market by utilizing attenuated total reflectance-fourier transform infrared (ATR-FTIR) spectroscopy with chemometric analysis. To develop the model, mustard oil was adulterated with palm oil in different concentrations ranging from 1% to 50%. Both pure and adulterated mustard oil samples absorbance were recorded by ATR-FTIR at the range of 4000-400 cm^{-1}. Chemometric analysis, such as orthogonal partial least squares-discriminant analysis (OPLS-DA) and orthogonal partial least squares (OPLS), were successfully applied at the wave number 1300-900 cm^{-1} to distinguish between pure and adulterated mustard oil as well as quantify with excellent accuracy. The values of area under the receiver operating characteristic (AUROC) curve showed 1.0. The developed OPLS model shows high calibration values, with R^2X (cum), R^2Y (cum) and Q^2 (cum) values of 0.988, 0.985, and 0.974, respectively. The validation model had lower root mean square error of estimation (RMSEE) and root mean square error of prediction (RMSEP) values which were of 2.060 and 2.450, individually. So, ATR-FTIR spectroscopy and chemometric analysis can be used for quickly detecting mustard oil adulteration by palm oil.

Keywords: Adulteration, mustard oil, palm oil, ATR-FTIR, chemometric analysis

POSTER 59

Reproductive and productive performance of sheep under traditional management system at Barind area of Bangladesh

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ABSTRACT

The reproductive and productive performance of sheep is very important to develop sustainable sheep farming. The aim of the present study was to evaluate the reproductive performance (RP) and productive performance (PP) of ewe under traditional condition at barind area. The present study was carried out 168 sheep from two upazila namely Paba and Godagari of Rajshahi to determine the reproductive and productive performance during the period from July, 2018 to June, 2019. The data collected from the owners using pre-tested questionnaires. The average values for the Age at puberty (AP), Service per conception (S/C), Conception rate (CR), Post-partum heat period (PPTP), Gestation length (GL) and Age at first lambing (AFL) were found 175.20±7.25 days, 1.40±.54, 86.57±5.99%, 18.63±5.24 days, 146.50±3.83 days and 332.66±31.18 days respectively have been studied. The average values for the Birth weight (kg), Litter size (kid/birth), Weaning weight (kg), Milk (ml/day), AdG up to 3 month (gm/d), AdG up to 6 month (gm/d), AdG up to 9 month (gm/d) and AdG up to 12 month (gm) were recorded 1.49±.44 kg, 1.61±.53, 5.74±1.59 kg, 249.87±12.38 ml, 48.57±18.00 gm, 44.35±10.53 gm, 38.32±5.77 gm and 35.69±4.26 gm respectively. It was concluded that the viz. post-partum heat period, service per conception, conception rate are shown excellent reproductive performance on the other hand the productive performance like milk production and daily growth rate are not satisfactory which is very important to the suitable breed under the conventional condition of sheep in barind region of Bangladesh.

Keywords: Sheep, reproductive, productive performance and Barind area

POSTER 60

The detrimental effects of common food additive (monosodium glutamate) on health at the multigenerational level: A mouse model study

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ABSTRACT

Monosodium glutamate (MSG) is extensively used as a flavor enhancer to increase the acceptability and palatability of various foods worldwide. MSG has been demonstrated to be hazardous to both humans and experimental animals. The study was designed to investigate the effects of MSG on growth and hemato-biochemical and reproductive performance in Swiss Albino Mice in parental mice and their offspring. The results showed that MSG supplementation with drinking water led to progressive increase in the body weight and development of obesity in parental mice and F1 offspring mice. The MSG-treated group exhibited greater absolute liver weights and relative liver weights, with the most significant ($P<0.05$) increase observed in the MSG-75 group. The relative kidney and spleen weights were reduced in the treatment group compared to the non-treated control group. Mice treated with MSG had no significant impact on hematological parameters in F0 and F1 mice except slight increase in total leukocyte count. In MSG-treated mice, liver tests including AST, ALT, ALP, values were elevated significantly ($P<0.05$) in F0 and F1 mice. Still, kidney function test measured by creatinine levels were not significantly differed. In MSG-exposed mice, lipid profile including TG, TC, HDL-c and LDL-c values were elevated significantly ($p<0.05$). A significant ($p<0.05$) reduction in the sperm count and sperm motility along with reduced weight of the testis was observed in F1 mice born from MSG-treated mice. All female mice upon matting with male mice were successfully conceived and delivered pups during treatment, but mice treated with MSG took a longer time to get conceived and delivered the lower number of pups compared to the control group. This study concludes that continued exposure to MSG may have multigenerational effects on growth and reproductions. Further investigation into MSG is necessary to determine its precise mechanism.

Keywords: Monosodium glutamate, multigenerational level, hemato-biochemical and reproductive performance, Swiss Albino Mice

POSTER 61

Knowledge, attitudes and practices of dried fish producers in the coastal area of Bangladesh

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ABSTRACT

In Bangladesh, fish drying is a low-cost traditional processing technique widely practiced by small-scale producers in the coastal area of Bangladesh. However, small-scale producer's knowledge, attitudes and practice (KAP) on the quality factors of dried fish are yet to be investigated. Purposely, this study identified the KAP of the dried fish producers in Patuakhali, Cox's Bazar, and Chittagong, Bangladesh, concerning quality factors of dried fish. A semi-structured questionnaire was prepared and 261 small-scale dried fish producers were interviewed in person. The result revealed, among the different quality factors, the producers showed the highest positive responses to the pre-processing, drying methods and additives used, and the lowest positive response to raw materials selection, and packaging-storage. The mean score of knowledge shows that the participants of Patuakhali and Chittagong differ significantly from the participants of Cox's Bazar in terms of dry fish processing knowledge, and the participants possess more mean knowledge than the participants of Cox's Bazar. The mean knowledge score was 14.19 ± 1.77, 12.90 ± 4.00 and 14.92 ± 1.88 for Patuakhali, Cox's Bazar and Chittagong, respectively. Knowledge-based mean score was higher for Cox's Bazar (92.32 ±8.90) followed by Patuakhali and Chittagong (86.49 ± 3.83 and 85.60 ± 3.92) and similar practice scores (6.56 ± 1.44-6.64 ± 1.41) was found irrespective of region. KAP on raw material quality and processing/drying techniques was more prominent than pre-processing and packaging-storage factors. Dry fish production needs accurate knowledge formation, which can lead to positive attitude development. Finally, this study suggested producer capacity-building training that could enhance the KAP consequence to ensure quality dried fish in local and global markets.

Keywords: Knowledge, attitude, practice, dried fish, coastal area

POSTER 62

Polyphenolic content, antioxidant and free radical scavenging activity of industrial grape waste

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ABSTRACT

Grape (*Vitis Vinifera*) pomace is a fermented byproduct that has a rich source of polyphenolic components with notable health benefits, including antioxidant properties. This work sought to evaluate the in vitro physicochemical properties and antioxidant activity of grape pomace extracts. The powdered GP was extracted using 80% ethanol with ultrasonic parameters @ ultrasonication 100%, temperature 50°C, time 60 minutes, and frequency at 45 kHz. The total phenolic content (TPC) and total flavonoid content (TFC) were assessed using the Folin−Ciocalteu reagent and a modified $NaNO_2$−Al $(NO_3)_3$−NaOH colorimetric technique. Consequently, TPC and TFC were quantified as mg GAE/g DE and mg QE/g DE at 760 nm and 510 nm wavelengths using UV-Vis spectrophotometry. The antioxidant properties were assessed using the 1,1-diphenyl-2-picryl hydrazyl (DPPH) radical and the 2,2′-azino-bis (3-ethylbenzothiazoline-6-sulfonic acid) (ABTS) scavenging assays. The results indicated that the extract yield was 20.27% based on the dry weight of GP. Thus, the TPC and TFC were 37.87 mg of gallic acid equivalent per gram of dry extract (37.87 mg GAE/g DE) and 20.63 mg of quercetin equivalent per gram of dry extract (20.63 mg QE/ g DE) respectively. The antioxidant and free radical scavenging capacities were quantified as IC_{50} (Half maximal inhibitory concentration) values from the DPPH and ABTS assay, were 534.55 μg/ml and 465.56 μg/ml, respectively. Consequently, ascorbic acid was utilized as a standard curve in concentrations of 50, 100, 150, 200, 250, and 300 μg/ml of diluents. Therefore, next research may focus on fortifying polyphenols in plant-based dairy products.

Keywords: Grape pomace (GP), ultrasound, generally recognized as safe, DPPH, ABTS, TPC, TF, antioxidant activity

POSTER 63

Fishery waste production in Bangladesh: Sources, utilization's and potentialities

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ABSTRACT

Bangladesh's fisheries sector is growing rapidly, and fish markets are generating immense amounts of waste (head, scales, bones, fin, gut, skin, viscera), which is an important issue. The objective is to identify the status of fishery waste production from fin fish in the southern region of Bangladesh. A structured questionnaire was prepared considering fish waste production, utilization, distribution and price. A face-to-face survey was conducted by 103 respondents in different wholesale fish markets in the Barishal region. The result found that fish waste mostly comes from carp fish (81%) and catfish (69%), where Rui and Pangus produce the highest amount. The highest source of waste was gut (95%), followed by scale (80%), viscera (41%), head (30%), and the lowest was skin (27%). The daily production was 10-20 kg on average, which is approximately 30-40% of body weight. Waste production availability is higher on weekends and also on market days. These wastes are generally used raw (75%) or dried (41%) and utilized mostly in fish and poultry farms. Fish waste distribution occurs around the country, with 55% and 9% contributions from exports, where India and China are the top distributor countries. Price ranges are varied, 25% of respondents reported selling mixed waste at 80-100 Tk/kg, while high-valued waste observed higher prices up to 500 Tk/kg for air bladder. Proper utilization of fish waste can provide economic and value-added nutritional benefits, thereby maximizing its potential in both local and global markets.

Keywords: Fish waste, utilization, fish market, Bangladesh, finfish, waste management

POSTER 64

Biogenic extraction and antibacterial effect of ecofriendly synthesized chitosan nanoparticles from shrimp (*Penaeus monodon*) shell

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ABSTRACT

To extract and nano-formulate antibacterial chitosan nanoparticles (ChiNPs) from shrimp shell using green technology. Shrimp shell, and shrimp waste were collected for chitosan extraction biogenically following demineralization, deproteinization, and deacetylation employing the isolated decomposer bacteria. The chitosan powder formation confirmed with Fourier Transform Infrared Spectroscopy (FTIR). The extracted powder (1%) was subjected to the eco-friendly synthesis of ChiNPs as particle source, and lemon extract as cross-linker. The particle yield was initially confirmed by UV-visible spectroscopy, DLS, AFM, FE-SEM, TEM and FTIR. The antibacterial activity was determined against MDR bacteria using disc diffusion test. Chitosan-specific spectral peak at 564 cm^{-1}, 711 cm^{-1}, and 1174 cm^{-1} for C−O−C, CH_2, and C−O chemical groups revealed from FTIR confirmed the formation of Chitosan. The ChiNP-specific UV-vis λ_{max} peak at 320 nm revealed the formation of NPs. The distribution of particle size (150-250 nm) was determined by DLS, AFM, SEM, and TEM. While FTIR confirmed the acetylation of chitin polymer to form chitosan oligomer with stretching at 1678 cm^{-1} for -NH_2 followed by crosslinking of chitosan oligomers with citric acid (lemon) with stretching at 1157 cm^{-1} for H_3N^+ and at 1015 cm^{-1} for C-O-C during ChiNPs synthesis. The inhibitory zone's diameter was 30 ± 0.4 mm, 34 ± 0.2 mm, and 36 ± 0.8 mm against methicillin- (*mecA*) and penicillin (*blaZ*)-resistant *S. aureus*, and streptomycin (*aadA1*)-resistant *E. coli*, respectively. Biogenically extracted and green synthesized ChiNPs showed competitive antibacterial effects with commercial antibiotic against MDR bacteria.

Keywords: Biogenic extraction, eco-friendly, ChiNPs, antibacterial effect, shrimp shell

POSTER 65

Dietary inclusion of oyster mushroom (*Pleurotus ostreatus*) stem residue on growth performance, meat quality and health status of Sonali chicken

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ABSTRACT

The current research aimed to assess the effects of oyster mushroom powder as potential alternative to antibiotic growth promoters on growth performance, physical meat quality, hemato-biochemical indices and cecal bacterial load in Sonali chickens. A total of 270 one-day-old male chicks were allotted in three experimental groups: control, antibiotic and mushroom. Each group had six replications of fifteen chicks. The control group was given a standard basal diet; the antibiotic group received basal diet plus 75 mg/kg chlortetracycline; and the mushroom group was fed oyster mushroom (*Pleurotus ostreatus*) powder (OMP) 300 mg/kg basal diet. Sonali chickens in mushroom group experienced significant improvements in the average daily gain (ADG), final body weight (FBW) and FCR than the control group. The mushroom group had a significant reduction in meat drip loss (at 30 days of aging) and cooking loss than both of antibiotic and control groups. Furthermore, OMP supplements significantly reduced serum LDLC, total cholesterol (TC), Urea−N and SGPT levels, while significantly elevated serum calcium and albumin than both control and antibiotic groups. Chickens in the mushroom and antibiotic group had a lower ($P < 0.05$) *Enterobacter* and total aerobic bacterial population than control. In addition, *Lactobacillus* spp. were higher ($P < 0.05$) in the mushroom group compared to the antibiotic and control groups. In summary, supplementing with 300 mg of OMP could be beneficial for safe broiler production due to its role in enhancing growth performance, improving meat quality, and supporting basic physiological and gut health functions.

Keywords: Oyster Mushroom, body weight gain, meat quality, physiology, Sonali Chicken

POSTER 66

Genetic traceability of massese sheep milk: Detection of adulteration with other ovine and bovine milk

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ABSTRACT

Massese sheep breed holds significant importance in the production of high-quality Pecorino cheese. The research analyzes genetic elements affecting coat color through examining the melanocortin 1 receptor (MC1R) gene to validate Massese dairy products while protecting them from milk adulteration with other sheep breeds or with cattle. The c.-31G>A is fixed for the Massese breed, while in other breeds, the c.-31G allele was either predominant or present at a frequency of 0.50. Notably, the same nucleotide position in the cattle MC1R gene carries the G nucleotide, allowing differentiation between Massese and non-Massese dairy products. Polymerase chain reaction-restriction fragment length polymorphism (PCR-RFLP) method was applied to authenticate Massese dairy products and detect adulteration. The protocol successfully demonstrated its sensitivity in detecting contamination from other sheep breeds as well as from cattle milk by identifying the presence of c.-31G allele. Furthermore, several cheese samples were tested for the confirmation of the expected presence of Massese milk. This study focused for verifying the purity of Massese dairy products while simultaneously identifying potential fraud involving milk from other species. However, the application of a similar genetic testing methodology has also found beneficial in distinguishing different cow milk and proven effective in dairy authentication systems.

Keywords: MC1R gene, coat color, milk authentication, dairy fraud detection, milk adulteration

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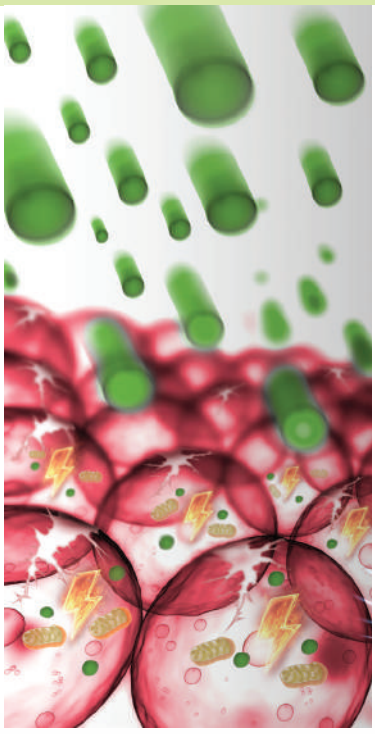

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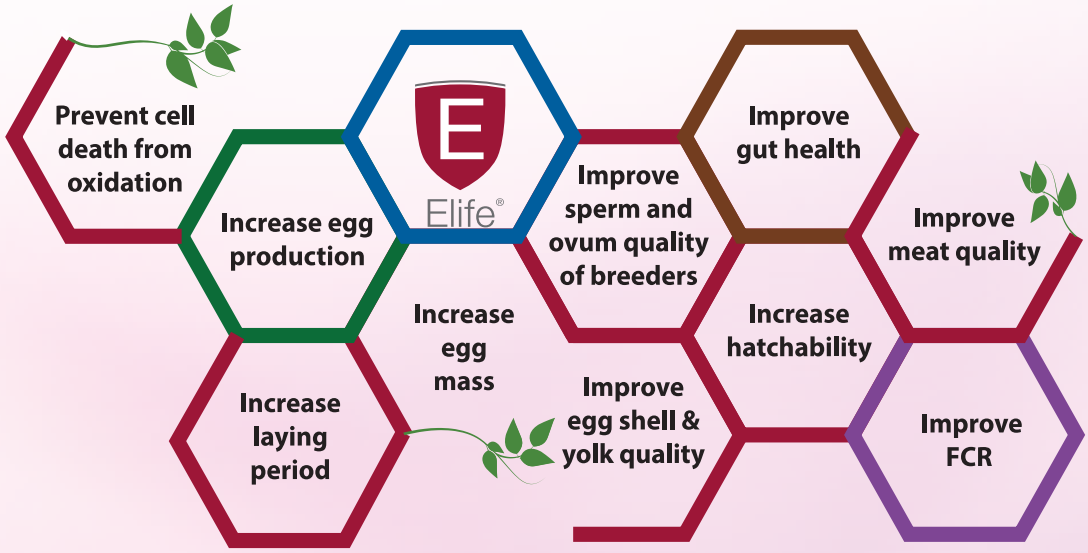

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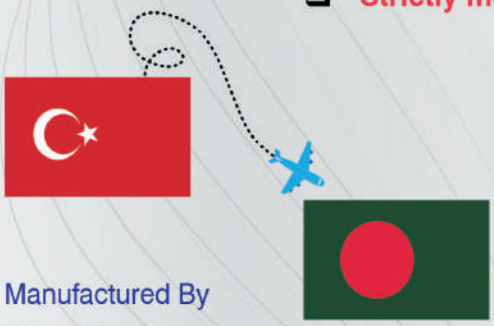

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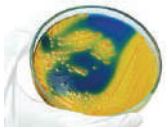

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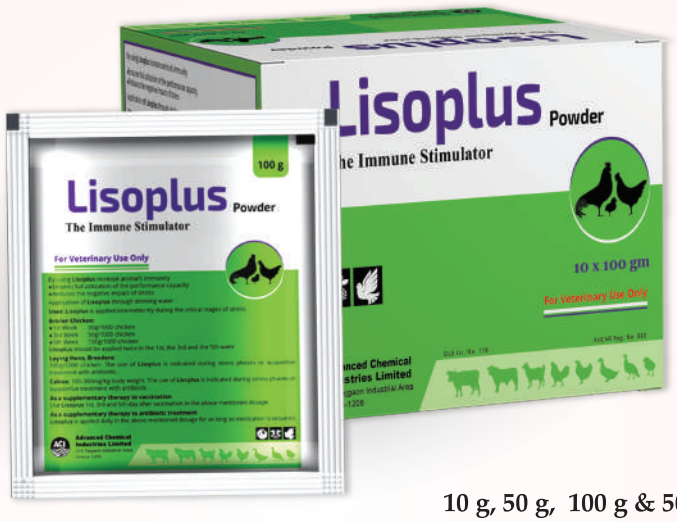

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