2024

INTERNATIONAL CONFERENCE ON

VETERINARY, FISHERIES AND ANIMAL HUSBANDRY

27TH & 28TH JULY 2024 | SOUTH AFRICA

HYBRID CONFERENCE

Organized by

BioLEAGUES

Academic Partner

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International conference on Veterinary, Fisheries and Animal Husbandry, South Africa

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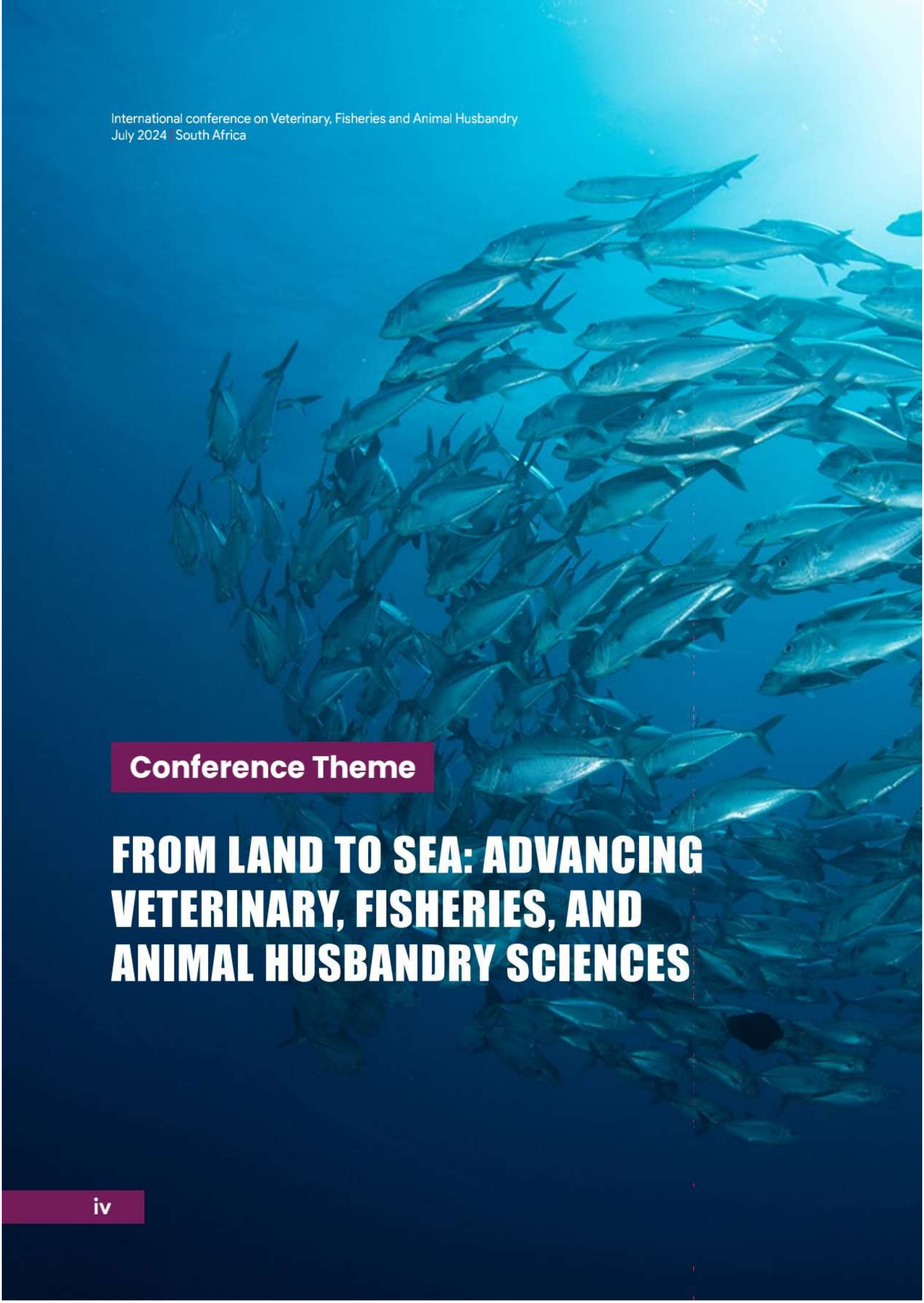

Conference Theme

FROM LAND TO SEA: ADVANCING VETERINARY, FISHERIES, AND ANIMAL HUSBANDRY SCIENCES

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Preface

This book reports the Proceedings of the International Conference on Veterinary, Fisheries and Animal Husbandry held on 27th and 28th July 2024 at South Africa organized by BioLEAGUES in association with Chandra shekhar Azad University of agriculture & Technology India.

The publishing department has accepted more than 125 abstracts. After an initial review of the submitted abstracts, 25 papers were presented at the conference and were accepted for publication in the Conference Proceedings. The topics that are covered in the conference include We would like to thank all the participants for their contributions to the conference and the proceedings.

Reviewing papers of the International Conference on Veterinary, Fisheries and Animal Husbandry was a challenging process that relies on the good will of those people involved in the field. We invited more than 10 researchers from related fields to review papers for the presentation and the publication in the International Conference on Veterinary, Fisheries and Animal Husbandry Proceeding. We would like to thank all the reviewers for their time and effort in reviewing the documents.

Finally, we would like to thank all the proceeding team members who with much dedication have given their constant support and priceless time to bring out the proceedings in a grand and successful manner. I am sure this International Conference on Veterinary, Fisheries and Animal Husbandry will be a credit to a large group of people, and each one of us should be proud of its successful outcome.

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About Conference

BioLEAGUES welcomes you to join the “International conference on Veterinary, Fisheries and Animal Husbandry” on 27th and 28th July 2024 at South Africa. This conference serves as a global platform for experts and professionals to converge and exchange insights on crucial topics. Focused on advancements in aquaculture, sustainable fisheries, and animal husbandry, the conference features keynote speakers, presentations, and workshops. Attendees engage in networking sessions, fostering collaborations and partnerships across borders. Exhibitions showcase cutting-edge technologies and research outcomes, while publication opportunities contribute to the dissemination of knowledge. The conference emphasizes international collaboration, promoting a global approach to address challenges in these fields. Discussions span policy considerations, regulations, and ethical aspects. Participants benefit from a dynamic environment that encourages dialogue and innovation. Overall, the conference plays a pivotal role in shaping the future of veterinary, fisheries and animal husbandry by facilitating information exchange, fostering collaborations, and addressing pressing challenges.

The theme of “From Land to Sea: Advancing Veterinary, Fisheries, and Animal Husbandry Sciences” delves into the convergence of advanced technologies and genetic conservation principles in freshwater environments. This theme encompasses innovative practices in aquaculture, utilizing high-tech solutions such as automation, precision farming, and real-time monitoring for optimal production. Conservation genetics takes center stage, emphasizing the preservation of genetic diversity within freshwater species to maintain ecological balance. Selective breeding strategies are explored to enhance desirable traits, promoting sustainable aquaculture practices. The theme underscores the use of bioinformatics tools in genetic analysis and interpretation, fostering breakthroughs in aquatic genetics. It addresses the ecological impact of hi-tech interventions, striving to minimize negative effects on freshwater ecosystems. This theme serves as a platform for collaboration among scientists, aqua culturists, and conservationists, driving efforts to sustainably advance freshwater aquaculture while prioritizing genetic diversity and environmental stewardship.

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About BioLEAGUES

Under the Technoarete Group, BioLEAGUES is a globally recognized non-profit professional organisation in the field of medicine, life sciences, and healthcare that unites, supports, promotes and helps the scientific community in a variety of ways, igniting and advancing all leading edge works of research with tremendous potential. In this capacity, BioLEAGUES has played a major role in many of the ground-breaking advancements that have occurred in various scientific domains over the past couple of decades. In addition to pushing the limits of innovation and discovery across various disciplines, BioLEAGUES has established programs to support development in a way where the rate of advancement not just increases continuously but also stays consistent over time.

A genuinely global organization in every, BioLEAGUES was founded in the year 2000 and has its headquarters in Chennai, India. With more than 8000 members, comprising executives from businesses, academia, policy makers, and representatives from other sectors and 12,000 student members, BioLEAGUES has committed itself to fostering innovation, growth, and progress in all parts of medicine, life sciences, healthcare, and associated fields. We work with a motto of creating a better tomorrow by organizing conferences and creating a network which will lead to a better tomorrow with the help of advanced technology, thus helping achieve sustainable development.

Mission

- To assure quality of incubation and innovation processes from nook and corner of the world.
- To connect professionals at an integrated platform for growth to divert knowledge and skills towards sustainable application of professional education.
- To ensure excellent opportunities for sharing and gaining knowledge through our professional activities and scientific conferences.
- To work with organisations to upgrade scopes of professional studies and research by monitoring further opportunities and applications.

Vision

- Of a united platform to explore research with opportunity to innovate multidisciplinary scopes and applications of professional studies.
- Of a conglomerate of scientific and academic associations working for humanity.
- Of digitalising innovation processes through our professional networking services.

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Message from Vice Chancellor, CSAUAT

Dr. Anand Kumar Singh

Vice-Chancellor
Chandra Shekhar Azad University of Agriculture & Technology,
Kanpur, Uttar Pradesh, India

It is my immense pleasure and honor to welcome the organizers, distinguished participants, delegates, scientists, researchers, industrialists, esteemed keynote speakers, and technical session chairs from India and abroad to the International Conference on "Veterinary, Fisheries, and Animal Husbandry" in South Africa, held in virtual mode. As the chair of this prestigious event, I appreciate the efforts of the Dean of the Faculty of Fisheries Science and Research Centre, Etawah, for bringing together BioLEAGUES and Chandra Shekhar Azad University of Agriculture & Technology, Kanpur, UP, the first NAAC-accredited University in India, to organize this significant event. More than 20 participants, including research students and scientists from this university, are actively participating. Our Organizing Committee Members from BioLEAGUES and Chandra Shekhar Azad University have demonstrated tireless efforts and excellent cooperation to ensure the success of this conference. BioLEAGUES is a non-profit association that organizes conferences and other scientific academic activities in collaboration with universities and institutions. I am delighted that we are joining this conference as an academic partner, jointly organizing the splendid scientific conference ICVFAH-2024 on July 27-28, 2024, in South Africa.

Why Veterinary, Fisheries, and Animal Husbandry Collectively?

The objective of the International Conference on Veterinary, Fisheries, and Animal Husbandry is to create a global forum that brings together professionals, researchers, and experts in these fields. This initiative is crucial for overcoming multidisciplinary gaps and fostering a comprehensive understanding of the relationship between animal health and aquatic ecosystems, leading to novel research outcomes. The conference serves as a breeding ground for investigating these relationships by bringing together experts to explore the interconnectedness between animal health, environmental sustainability, and aquatic biodiversity. This platform will facilitate discussions on emerging

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diseases affecting both aquatic and terrestrial species, advancements in veterinary treatments for aquatic animals, and strategies for sustainable fisheries management and their application to animal husbandry practices.

In line with the United Nations' One Health initiative, this conference emphasizes the importance of integrated approaches to animal, human, and environmental health. By addressing these interconnections, we aim to enhance the income of farmers, attract profitable investments in this sector, and showcase contemporary developments in science and technology for fisheries, dairy, and related fields. The combined significance of veterinary, fisheries, and animal husbandry is underscored by their collective contributions to nutritional security. Sustainable practices in these sectors ensure the health of animals and ecosystems and enhance the quality and availability of nutritious food sources for human populations. This holistic approach drives innovations that benefit both terrestrial and aquatic ecosystems, promoting the well-being of all life forms and the environment.

Why South Africa?

South Africa offers a unique combination of marine and terrestrial ecosystems, providing abundant opportunities for research in veterinary medicine, fisheries management, and animal husbandry. Its vast coastline and inland water bodies are home to various aquatic species vital for commercial fishing and conservation efforts, making the nation a focal point for discussions on sustainable resource management and biodiversity conservation. Let us join hands and minds to work together, generate new knowledge, and ensure its application by linking science with society.

Thank you.

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Veterinary
Fisheries and
Animal Husbandry

Message from Director, BioLEAGUES

Mr. A. Siddth Kumar Chhajer

Managing Director & Founder,
BioLEAGUES, India

On behalf of BioLEAGUES, I am delighted to welcome all the delegates and participants around the globe to the International Conference on Veterinary, Fisheries and Animal Husbandry in association with Chandra Shekhar Azad University of Agriculture & Technology, India which is on 27th & 28th July 2024 at South Africa. This conference will revolve around the theme "From Land to Sea: Advancing Veterinary, Fisheries, and Animal Husbandry Sciences".

It will be a great pleasure to join with Scientists, Researchers, and Research Scholars all around the globe. We are delighted to invite you to an exceptional event dedicated to fostering progress and addressing the pressing issues in aquaculture, sustainable fisheries, and animal husbandry. This conference promises to stimulate and enrich participants through a series of presentations and discussions centered around transformative advances across various disciplines.

I congratulate the Organizing Secretary, Joint Organizing Secretary, Conference Chair, Conference co-chair, Committee Members and all the people involved for their efforts in organizing the International Conference on Veterinary, Fisheries and Animal Husbandry and successfully conducting the International Conference and wish all the delegates and participants a very pleasant conference.

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Message from CEO, BioLEAGUES

Mr. Rudra Bhanu Satpathy

CEO & Founder,
BioLEAGUES, India

It is indeed a privilege to acknowledge and thank all the supporters and organizers of the "International conference on Veterinary, Fisheries and Animal Husbandry", who contributed greatly to organize the conference successfully.

I would like to acknowledge and thank the Organizing Secretary, Joint Organizing Secretary, Conference Chair, Conference co-chair, Committee Members for their valuable contribution in the International conference on Veterinary, Fisheries and Animal Husbandry.

My special thanks to all our Keynote Speakers who so graciously accepted our invitation to participate in the conference. I also wish to acknowledge and thank the Academic Partners whose support was extremely grateful.

I would like to specially thank our Organizing Committee Members from various organizations whose continuous support have helped us plan and execute the conference successfully.

I am highly indebted to the contribution given by all the Participants to the conference.

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International conference on Veterinary Fisheries and Animal Husbandry

About Keynote Speakers

Dr. Benjamin Obukowho Emikpe

Professor, Department of Pathobiology , School of Veterinary Medicine, Kwame Nkrumah University of Science and Technology Kumasi, Ghana

Dr. Bernerd Mulwa Fulanda

Dean, School of Pure and Applied Sciences(SPAS), Professor of Fisheries & Marine Sciences, Department of Biological Sciences, Pwani University Kilifi, Kenya

Dr. Shehu Latunji Akintola

Professor of Fisheries, Department of Fisheries, Lagos State University, Sabbatical University of Cape Coast, Ghana.

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International conference on Veterinary Fisheries and Animal Husbandry

Abstract's Index

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Study on Preparation of Flavoured Milk from Blend of Cow and Goat Milk using Strawberry and Vanilla Essence

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Ashwani Kumar Singh
C.S. Azad University of Agriculture & Technology, Kanpur, India

Dr. Brijpal Singh
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Abstract:

In the investigation entitled "Study on Preparation of flavoured milk from blend of cow and goat milk using strawberry and vanilla essence" was conducted in the laboratory of department of Animal Husbandry and Dairying, C.S.A. University of Agriculture and Technology Kanpur. In this experiment three levels of sugar combination ratio (6%,7%,8%) were taken three levels of fat (3.2%, 3.6%, 4.0%) and two types of essence (strawberry and vanilla). The effects of various attributes on quality of flavoured milk were analyzed and determine for physical quality flavour, colour and appearance, sweetness, over all acceptability, and chemical quality moisture, fat, protein, total lactose, sucrose, ash were determined. The study revealed that the physical quality of flavoured milk prepared from blend of cow milk and goat milk with strawberry essence, 6% sugar level and 3.2% fat level of flavoured milk was found better as compared to other treatment combinations with in fresh day. The chemical qualities of flavoured milk prepared from optimum level of Strawberry essence with 6%sugar and 3.2% fat level, treatment combination found optimum percentage of moisture, fat, protein, lactose, Sucrose, ash, was found better as compared to other treatment combinations. It is therefore recommended that the good quality of flavoured milk can be prepared by using Strawberry essence with 3.2% fat level and 6% sugar level.

Keywords:

Flavoured Milk, Strawberry and Vanilla Essence, Cow and Goat Milk

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Effects of Varying Protein and Lipid Levels, with or without the Addition of L-carnitine Supplementation on Growth Performance and Nutrient Utilization of Asian Seabass (*Lates calcarifer*) Reared in Recirculating Aquaculture System

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Abstract:

In a 60-day feeding trial, the impact of supplementing L-carnitine to low protein high energy (LPHE) diets was investigated. The study focused on the growth performance, nutrient utilization, health status, and fatty acid profile of Asian seabass (*Lates calcarifer*) reared in a recirculating aquaculture system (RAS). Seven iso-energetic (~4600 Kcal/kg) diets with varying levels of protein and lipid, both with and without L-carnitine supplementation viz. control- (47/10), T1(44/12), T2(41/14), T3(44/12 with L- carnitine 0.05%), T4(44/12 with L- carnitine 0.1%), T5-(41/14 with L- carnitine 0.05%), T6 (41/14 with L-carnitine 0.1%) were prepared. L. calcarifer fingerlings with an average weight of 5.2 ± 0.1 g were randomly allocated to each treatment in triplicate, with 50 fingerlings per replicate. The fingerlings were fed three times a day until they reached satiation. The findings of present study revealed significant variations ($P < 0.05$) in final weight, weight gain, Specific Growth Rate (SGR), Feed Conversion Ratio (FCR), Protein Efficiency Ratio (PER), and Thermal Growth Coefficient (TGC) among different treatments, demonstrating linear trends. Fish survival rates across treatments showed no significant variations ($P > 0.05$) and lacked both linear and quadratic trends. Dietary treatments did not have an overall significant effect ($P > 0.05$) on whole-body moisture and crude protein contents of seabass, showing no discernible linear or quadratic trends. However, notable differences ($P < 0.05$) were observed in whole-body lipid and total ash contents, displaying linear and quadratic trends. The n-6 polyunsaturated fatty acid (PUFA) and n-3 PUFA content exhibited an overall significant impact due to dietary variations, showing both linear and quadratic trends. Cholesterol, triglyceride, and cortisol contents showed statistically significant overall differences, with discernible linear and quadratic trends across treatment groups. Superoxide dismutase (SOD) and catalase (CAT) activity also demonstrated an overall significant effect, accompanied by a linear trend. In conclusion, adding L-carnitine at a 0.1% concentration to diets containing 44% protein and 12% lipids boosted both growth performance and antioxidant response of *L. calcarifer*.

Keywords:

L- carnitine, *Lates calcarifer*, Superoxide dismutase, Catalase, Fatty acid, Cortisol

ISBN: 978-93-92106-95-8

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Effects of Combination of Novel Feed Ingredients on Growth Performance, Feed Utilization and Immune Response of Pacific White Shrimp, *Penaeus vannamei*

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Abstract:

An eight-week feeding trial was conducted to evaluate the efficiency of a combination of novel feed ingredients in replacing fishmeal (FM) and to assess their impact on growth performances, apparent digestibility coefficient (ADC), antioxidant and digestive enzyme activities in Pacific white shrimp *Penaeus vannamei*. Five isonitrogenous (Crude protein: 36.01%) and isolipidic (Crude lipid: 7.5%) diets were formulated using different protein sources. Diet-1 (Control diet): used fishmeal as the main protein source; Diet-2: fishmeal was replaced by poultry by-product meal(PBM), Broken rice (BR) and single cell protein (SCP) (1:1:1); Diet-3: fishmeal was replaced by insect meal(IM), rapeseed meal (RPM) and single cell protein (SCP) (1:1:1); Diet-4: fishmeal was replaced by fish waste(FW), peanut meal (PM) and single cell protein (SCP)(1:1:1); Diet-5, fishmeal was substituted by poultry by-product meal(PBM), Broken rice (BR) and single cell protein (SCP) insect meal(IM), rapeseed meal (RPM) (1:1:1:1:1:1:1). Juvenile shrimps with an average weight of 1 gram has been stocked in different experimental tanks fed with above diet following completely randomized design (CRD) in triplicates. At the end of the feeding trial, it was observed that Diet 5 had significantly improved ($p<0.05$) weight gain (13.55±0.34), and FCR (1.24±0.04) and recorded the best feeding efficiency when compared to other treatments. At the same time, diet 3 has shown an increase in weight gain (12.81±0.19) and SGR (4.55±0.07) than other diets. Diet 5 also showed significantly higher protease activity in both hepatopancreas and intestine tissues. Protein digestibility was significantly higher in diet 5. The results of the present study demonstrated that a composite mixture of PBM, BR, SCP, IM, RPM, PM, and FW (1:1:1:1:1:1:1) is an excellent alternative diet to replace fishmeal without any adverse effect on growth performance and nutrient utilization of in shrimp diet.

Keywords:

Novel feed, Fishmeal replacement, *Penaeus vannamei*

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Impact of Fishmeal Replacement with Poultry by-product Meal and Fish Protein Hydrolysate: Effect on Growth Performance, Nutrient Utilization, Whole-body Composition and Growth Gene (*IGF-1*) Expression of Striped Murrel (*Channa striata*)

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Abstract:

A 60-day feeding trial was conducted to examine the effects of replacing fish meal (FM) protein with graded levels of poultry by-product meal (PBM), with or without supplementation of fish protein hydrolysate (FPH) on growth, nutrient utilization, whole-body composition, and IGF-1 mRNA expression of striped murrel (*Channa striata*). Five isonitrogenous (44%, crude protein), isolipidic (11%, crude lipid) and isoenergetic (18 MJ/Kg) diets were formulated to replace 0%, 25% and 50% of FM protein with PBM and PBM supplemented with FPH and the diets were designated as 35 FM (control), 25 PBM, 50 PBM, 25 PBM+FPH and 50 PBM+FPH. Triplicate groups (n=3) of 20 striped murrel juveniles with an average initial weight of 10.02±0.15g were fed with test diets daily thrice until apparent satiation (08:00, 13:00 and 18:00 H). Among the dietary groups, significantly higher ($p < 0.05$) weight gain (41.05±1.38 g), specific growth rate (2.71±0.05 % day-1), and better feed conversion ratio (1.30±0.03) were found in fish fed 50 PBM+FPH diet compared to other diets including control (35 FM). No significant differences ($p > 0.05$) were observed in whole-body composition of striped murrel fed different experimental diets. Moreover, fish fed with 50 PBM+FPH diet resulted significantly ($p < 0.05$) up regulated IGF-1 (2.04±0.06) mRNA expression was obtained. It is concluded that, 50% FM protein can be replaced by PBM with supplementation of FPH in striped murrel diets without any negative impacts on growth, nutrient utilization, whole-body composition and growth gene expression (IGF-1) of striped murrel (*Channa striata*).

Keywords:

Animal by-products, *Channa striata*, Fish protein hydrolysate (FPH), Growth performance, Growth gene expression (IGF-1), Poultry by-product meal (PBM)

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Feeding Time Synchronises Gut Molecular Clock Gene Expression in Rohu (Labeo rohita, Hamilton 1822) in the Absence of Natural Photocycle

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Abstract:

Photocycle and feeding regimes act as powerful synchronisers of circadian rhythmicity. The present study aimed to investigate the effects of photocycle and feeding time in regulating the expression of Cry3 and Per3 in *Labeo rohita* hindgut. In this experiment, 180 rohu juveniles (initial weight of 22.8±0.01g) were distributed into five groups (1 control and 4 treatments, n=3), and maintained following feeding regimes and photocycle. The control group was fed with balanced commercial feed (2% BW) at 8.00 and 20.00 h under a natural LD (light and dark) cycle of (13.22±0.05 L, 10.77±0.05D), whereas the treatment group was kept at 24 hours light and fed with the same feed ration at 8.00 h (T1), 20.00 h (T2), 8.00 and 20.00 h (T3) and random feeding (T4) daily for 60 days. Then, hindgut tissues were collected from 24-h fasted fish from each group every 6 h during the 24-h cycle. Results show the clock genes, rCry3 and rPer3 were synchronised similarly by both zeitgebers, photocycle and feeding times in rohu hindgut. In a natural LD cycle, rCry3 and rPer3 rhythmicity was not predicted by feeding time. Without a natural LD cycle, both genes anticipated food delivery when the cue appeared cyclically. The rCry3 and rPer3 disappeared in the absence of both zeitgebers. The present study reveals: 1) the feeding regime is a strong signal that entrains this peripheral oscillator in the hindgut of rohu, *Labeo rohita* 2) the clock genes Cry 3 and Per 3 are synchronised by the photocycle and feeding regime, in the *Labeo rohita* hindgut.

Keywords:

Clock genes, Hindgut, Circadian rhythm, Photocycle, Molecular clock

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Gender-specific growth Dynamics and Biometric Indices of *Scylla olivacea* (Herbst, 1796) from the Cochin Estuary, Southwest Coast of India

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Abstract:

The present study investigates the gender-specific growth patterns and biometric indices of Scylla olivacea. Biometric indices, such as length frequency distribution (LFDs), carapace width weight relationships (CW-WRs), and condition factors (Allometric condition factor (KA), Fulton's condition factor (KC), and relative condition factor (KN), are crucial in assessing the biological changes in fishes. *S. olivacea*, a commercially important mud crab species, from the Cochin estuary, was subjected for systematic collection of morphometric data, including carapace width (CW), carapace length (CL), chelar propodus length (ChL) and width (ChW), abdominal width (AW) and length (AL), and weight (W) using a total of 4138 crabs comprising 2157 males and 1981 females From June 2020- to May 2023. Statistical analyses using the R program (ver. 4.4.0) were employed to derive the CW-WRs and different condition factors for both male and female crabs and pooled data. The CW varies from 67 to 155 mm in females and 65 to 167 mm in males, with mean CW values of 114.28±15.01 mm and 114.77±17.08 mm, respectively.CL varied from 45 to 105 mm in females and 28 to 118 mm in males, with mean CL values of 77.86±10.61 mm and 80.09±13.24 mm, respectively. The weight of females ranged from 11 to 730 g, averaging 243.86±103.47 g, while males weighed between 54 and 880 g, with a mean weight of 324.02±156.29 g. The results indicate a significant correlation between CW and W, for males, the CW-WRs are expressed as $W=0.0000716*CW^{3.212}$ for females, $W=0.000276*CW^{2.875}$. Additionally combining both males and females (pooled)$W=0.000120\times CW^{3.077}$. The 'b' values of CW-WRs revealed potential gender-specific variations in the growth patterns i.e. Positive allometric growth in males and negative allometric growth in females of *S. olivacea*. The allometric relationships between the characters are positive and highly significant. The Fulton's condition factor (KC) ranges from 0.001 to 0.033 in females and 0.007 to 0.065 in males, with a mean of 0.015±0.003 and 0.019±0.004, respectively. The allometric condition factor (KA) ranged from 0.003 to 0.060 in females and 0.003 to 0.024 in males, with mean of 0.028±0.005 and 0.007±0.002, respectively. The relative condition factor (KN) ranged from 0.093 to 2.176 in females and 0.362 to 3.374 in males, with mean of 1.022±0.195 and 1.019±0.219, respectively. This study provides information on the growth and condition of the crab, which will help in identifying effective fisheries management strategies and contribute to the broader understanding of *S. olivacea* biology.

Keywords:

Scylla olivacea, Condition Factors, Cochin estuary, Growth patterns, Gender-specific growth, Allometric growth

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Mud Crab Reovirus (MCRV)- A New Threat to Indian Crab Fishery?

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Abstract:

Mud Crab Reovirus (MCRV) has emerged as a significant threat to the Indian crab fishery, causing mass mortality and substantial economic losses in cultured mud crab populations. Initially identified in 2007 in the Guangdong and Fujian provinces of China, MCRV has recently been detected in Indian crab farms. This viral pathogen, responsible for a condition referred to as "sleeping disease," has led to 80% mortality rates and severe economic impacts, primarily affecting the giant mud crab, Scylla spp. MCRV, a double-stranded RNA virus with 12 segments belonging to the family Reoviridae, primarily infects the connective tissues of the hepatopancreas, gills, and intestines in mud crabs. Experimental infection studies have demonstrated high mortality rates of 80-100% through various routes of infection. The current practices of mud crab farming in India are capture-based, involving the use of wild-caught crabs of various sizes for fattening in grow-out culture systems. Moreover, co-infection with the uropathogenic bacteria Staphylococcus saprophyticus has been reported in cultured mud crabs, exacerbating the disease burden. The emergence of MCRV poses a significant challenge to the sustainability and growth of the Indian crab fishery, an important source of livelihood for coastal communities. To mitigate the impact of MCRV on the crab aquaculture industry, effective disease management strategies and the development of rapid diagnostic tools are crucial.

Keywords:

MCRV, Sleeping Disease, Crab Fishery

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CamScanner

To Study the Variation in Milk Composition in Buffaloes in Different Seasons of the Year

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Abstract:

The present study are carried out on 250 Buffaloes owner in rural area of Lakhipur (Kheri) District (U.P) during 2019-2021. The one year was divided in five season summer, rainy, autumn, winter and spring season in related village of Buffaloes owners were taken sample to observe the, composition in Buffaloes of the rural area of Lakhipur (Kheri) District (U.P). In first phase randomly selected from five block of District Lakhimpur (Kheri), each block randomly selected in two villages and each village selected of 25 farmers .Farmers were categorized into five groups on the basis of land holding capacity i.e., Landless farmers (landless), Marginal Farmers (< 1.00 hectare), Small Farmers (1.00-2.00 hectare) ,Medium Famers (2.00-4.00 hectare) and Large Farmers (4.00-10.00 hectare).In phase second and third phase were ten lactating buffaloes were selected in each category of farmers from phase first. Which selected lactating buffaloes mostly deficient in digestible crude protein intake (DCPI). Total 50 buffaloes were selected in each season and selected buffaloes extra feed given by mineral supplement 50 gm., 25 gm., Urea, 40gm. The data analysis of milk composition for water content, total solid, fat, solid not fat, protein, lactose and ash percentage in milk highly significantly ($P<0.05$) between season. Analysis of variance showed the ash percentage will not be significantly differed in various season. The mean percentage of water was 85.88±0.11, 86.90±0.14, 85.96±0.02, 86.64±0.08 and 84.38±6.04 respectively in summer, rainy, autumn, winter and spring season. The mean percentage of fat was 7.20±0.05, 6.96±0.01, 6.26±0.04, 6.92±0.03 and 7.10±0.03 respectively in summer, rainy, autumn, winter and spring season. The mean percentage of protein was 3.77±0.10, 3.60±0.11, 3.67±0.03, and 3.78±0.06 and 3.79±0.04 respectively in summer, rainy, autumn, winter and spring season. The mean percentage of lactose was 4.89±0.06, 4.56±0.06, 4.75±0.03, 4.87±0.04 and 4.77±0.03 respectively in summer, rainy, autumn, winter and spring season. The mean percentage of Ash was 0.74±0.03, 0.72±0.12, 0.74±0.02, 0.74±0.02 and 0.76±0.02 respectively in summer, rainy, autumn, winter and spring season. The mean percentage of total solid was 16.10±0.02, 13.09±0.01, 14.09±0.01, 13.41±0.14 and 14.31±0.06 respectively in summer, rainy, autumn, winter and spring season. The mean percentage of Solid Not Fat (SNF) was 9.33±0.04, 9.00±0.04, 9.25± 0.02, 9.22±0.03 and 9.22±0.02 respectively in summer, rainy, autumn, winter and spring season.

Keywords:

Variation, Milk composition, Buffaloes and Seasons of the Year

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Microplastic Abundance, Composition and Distribution in Water, Sediments and Fish Samples Collected from Hiran Reservoir of Gujarat

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Abstract:

This study was carried out on the water, sediments and fish samples collected from Hiran-II reservoir. A total of 1563 MPs from the water samples throughout the study period was extracted of which 43.44% (679 MPs), 32.82% (513 MPs) and 23.74% (371 MPs) from site 1, 2 and 3 respectively. The highest and lowest abundance of MPs was recorded in July (244 MPs) and December (79 MPs). The average abundance of MPs/liter from the total sites ranged from 1.756 to 5.422. Overall Mean ± S.D. per liter water sample throughout the study period was 2.89 ± 0.91. In water samples, MPs size of 0.1-1 mm was dominant (45%) followed by 1-2 mm (22%). Based on the shape, fibers were most dominant (45%) followed by fragments (38%). Based on the color, the most dominant was black (32%) followed by blue (28%). The polymers of microplastic identified in were polypropylene and low density polyethylene in water samples.

A total of 1202 MPs from the sediment samples samples throughout the study period was extracted of which 40.02% (481 MPs), 31.20% (375 MPs) and 28.78% (346 MPs) from site 1, 2 and 3 respectively. The highest and lowest abundance of MPs was recorded in July (124 MPs) and December (77 MPs). The average abundance of MPs/100 g in the sediment from the total sites ranged from 0.856 to 1.378. In sediment samples, MPs size of 0.1-1 mm was dominant (41%) followed by 1-2 mm (25%). Based on the shape, fibers were most dominant (47%) followed by fragments (36%). Based on the color, the most dominant was black (31%) followed by red (30%). The polymers of microplastic identified in were polypropylene and polyethylene in sediments samples.

A total of 2273 MPs from the fish samples throughout the study period was extracted out of which 74.35% (1690 MPs) from gut and 25.65% (583 MPs) from gills. The highest and lowest abundance of MPs was recorded in post-monsoon (979 MPs) and pre-monsoon (488 MPs). Average abundance of MPs/fish was 0.065, 0.117 and 0.165 in pre-monsoon, monsoon and post- monsoon period respectively. Average abundance of MPs/gram gut was 0.69, 1.04 and 1.44 in pre-monsoon, monsoon and post- monsoon period respectively. Fibers (82%) were the most dominant.

The most dominant MPs based on the size was 0.1-1 mm with 1134 MPs (50%) followed by 1-2 mm with 503 MPs (22%). Based on the MPs based on the colour in fish samples, the blue and red (31%) was most dominant. The polymers of microplastic identified in were polypropylene and Polyethylene in fish samples.

Keywords:

Fish, Gills, Gut, Microplastics, Sediment, Water

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Scientific Feeding Management of Milch Animals in District Ambedkar Nagar Uttar Pradesh

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Abstract:

The study was carried out to enhancement of milk production to acquaint with the problems faced by the farmers in adopting scientific feeding management practices in district ambedkar nagar, Uttar Pradesh. In the study area, commonly available green fodder crops like Pearlmillet, Berseem, Sorghum, Urd and Moong fed to all the categories of dairy animals. The average intakes of green fodder by the milch, dry and advanced pregnant animals were 16.21, 8.13 and 9.34 kg/day/animal. Commonly dry fodders fed were straw of wheat / paddy. The average dry fodder intakes to the milch, dry and advanced pregnant animals were 8.05, 4.63 and 5.96 kg/day/animal. Maximum farmers fed concentrates like crushed barley, wheat bran, rice bran and readymade concentrates mixtures for feeding to the dairy animals. The average quantities of concentrate intake by the milch animals were 2.11 kg/day/animals. While observing feeding practices followed by the respondents, it was noted that the chopping of green fodder as a daily routine was practiced by 100 per cent of the farmers.the study showed that all the categories of animals like milch, dry and advanced pregnant animals were 'under-fed' category for DCP intake (71.82, 61.22 and 25.40 per cent, respectively), while 'over fed' category for TDN intake (91.30, 73.26 and 49 per cent, respectively). Study also showed that no any farmers Store fodder as silage and hay.

Keywords:

Animal, DCP, Farmers, Green fodder, Hay, silage and TDN

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Effect of Incorporating Full-Fat Black Soldier Fly Larvae Meal (BSFLM) in Meat Type Chicken Diets on the Lower Gut Short Chain Fatty Acids Profile, Intestinal Morphology and Intestinal Lesion Score

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Abstract:

Though protein demand is increasing, the animal protein industry on a global scale is facing the challenge of replacing antibiotic growth promoters (AGP) to raise broiler chickens. Using AGP is a long-standing practice to include in poultry diets for improving the intestinal health and subsequent performance of the broiler chicken. Due to increased restrictions and bans on the usage of antibiotics, the poultry-producing community is in search of a suitable and sustainable alternative to AGPs. The primary objective of the present study was to evaluate and analyte the potential impacts and consequences associated with the inclusion of BSFLM in a commercially available meat type chicken when compared to diets that either contained or lacked the presence of antibiotic growth promoters, specifically enramycin at a concentration of 8% and chlortetracycline at a concentration of 15%. The objective of the study was to evaluate the inclusion of BSFLM on cecal short chain fatty acids (SCFAs), and the intestinal health. 180 male day-old Vencobb430Y chicks were weighed (mean BW 42.52 g) ($P > 0.05$) and randomly distributed into isonitrogenous and isoenergetic dietary treatments in three equal groups. BSFLM group has shown significant higher concentration of short chain fatty acids in cecum like acetate, isobutyrate, butyrate, and total SCFAs compared to both the AGP and CONTROL groups ($P<0.05$). Also, in BSFLM groups, the villi height of duodenum and jejunum is significantly higher compared to the AGP group ($P<0.05$). From the analysis of frequency plots depicting the severity of intestinal lesions, it was observed that the presence of serosa and mucosa congestion in the anterior sections of the gastrointestinal tract was within the expected range for both the CONTROL and AGP groups, thus indicating that this particular physiological condition can be considered as normal in these experimental groups. In the duodenal part, incorporating BSFL meal showed significantly higher villi height and crypt depth compared with CONTROL and AGP ($P<0.05$). Inclusion of full-fat BSF has improved overall intestinal health and lower lesion scores compared to the CONTROL and AGP groups. In conclusion, the study effectively contributes unique and groundbreaking evidence that unequivocally demonstrates the profound benefits of incorporating full-fat black soldier fly larvae (BSFL) meal into the dietary regimens of broilers, thereby significantly bolstering the health and functionality of their gastrointestinal tract, particularly in instances where the inclusion of antimicrobial growth promoters (AGP) is deliberately omitted from said diets.

Keywords:

Black Soldier Fly Larvae Meal, Antibiotic Growth Promoters, Broiler Chickens, Animal Feed, Gut Health, SCFAs, Intestinal Lesions, Intestinal Lesion Score

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Emergence of Resistance to Commonly used Anthelmintics and Evaluation of Anthelmintic Efficacy of Polyherbal Drug in Nematode Parasites of Goat

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Abstract:

Anthelmintic resistance is a major concern in small ruminant farming, leading to reduced productivity and economic losses. The present study was conducted at goat farms/herds of Tarai region around Pantnagar. Total 146 goats exhibiting FAMACHA scores ranging from 3 to 5, were examined to determine the prevalence of GI nematodosis. Out of 146 goats, 103 were diagnosed with GI nematodosis. From these 103 goats, 24 goats of either sex, aged between 9 months to 5 years, were selected with faecal egg counts exceeding 200. They were randomly assigned to four equal groups. Group I received oral fenbendazole treatment at 5mg/kg body weight, Group II received oral ivermectin at 0.2mg/kg body weight, Group III received an oral polyherbal formulation at 6.5g/30 kg body weight, and Group IV served as the untreated control. A pilot study was also conducted earlier on three goats to rule out any adverse effects of the polyherbal formulation used in the experimental study.

The haematological, biochemical, and oxidative stress related parameters were investigated at intervals of 0, 7, 14, and 21 days. Faecal samples were collected directly from rectum on 0 day (Pre-Treatment), 7th day, 14th day and 21st Day (post-treatment) for calculation of EPG and FECRT.

There was significant improvement in the mean values of Red Blood Cells, Haemoglobin, and Packed Cell Volume after treatment with polyherbal formulation and ivermectin, as compared to control. ALP, AST, and ALT levels within Groups I, II, and III reduced significantly by the 21st day, aligning with the healthy goat's standard range. Whereas the values in Group IV showed a steady rise. The increased enzyme activity in affected animals aligns with detrimental effects caused by traumatic abomasal and intestinal damage, directly linked to parasitic infestation. Serum concentrations of GSH-Px, SOD, and CAT were notably elevated on the 21st day post-treatment in goats treated with the polyherbal formulation, ivermectin, and fenbendazole, along with decreased MDA levels, indicating decreased oxidative stress after treatment. It was revealed that levels of GSH-Px, SOD and CAT were low during stress caused by GI nematodosis whereas MDA levels were high.

Assessment of EPG and FECRT (%) values on the 21st day post-treatment revealed efficacy rates of 85.07% for ivermectin, 90.62% for the polyherbal formulation, and 59.05% for fenbendazole. Significant improvement in the mean EPG in both treatment groups G II and G III was seen on 14th day post treatment compared to G I thus indicating resistance to fenbendazole.

Coproculture on the 14th day post-treatment indicated that 97% of identified species were H. contortus, establishing it as the primary cause of GI nematodosis in goats from the Tarai region of Uttarakhand.

Keywords:

Anthelmintic Resistance, Gastrointestinal Nematodosis, FECRT, Goat, Polyherbal Formulation, FAMACHA Score

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The Role of Extension Education System for Sustainable Fisheries

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Abstract:

The role of extension in fisheries cannot be ignored. Strong extension system is the key to bring the desired changes to meet the present day challenges related to sustainable fisheries. Basically, the end product of the fisheries extension system is to work with fisheries within an agro-climate and economic environment by providing suitable technologies to enrich knowledge and upgrade skills to improve better handling of natural fish resources and applying the cutting-edge technologies to achieve desired production level. Extension system plays an pivotal role in empowering fishers and other stakeholders to make fish farming more participatory, demand-driven, knowledge intensive and skill supportive for disseminating most appropriate technical, management and marketing skill to improve profitability in fisheries that can overcome the emerging challenges and concern, thus developing a synergistic pathway for enhancing productivity along with quality produce in order to sustain production base and ensure ecological and livelihood security. The extension system needs to disseminate a broad array of information starting from farm to fork in an integrated manner for safe delivery from field to the consumer considering all the aspects of conservation and production technologies, post-harvest management, processing and value addition. Such knowledge based decision should be incorporated in reshaping of extension approaches. In present scenario, the extension system envisages a transformation from technology driven to market driven extension, where fishers would give emphasis on commercialization of fish and fish based products, maintenance of quality, fulfilling consumers' demands, etc., in the program planning process for the effectiveness of any extension programme.

Keywords:

Extension System, Fisheries, Environment, Sustainable, Livelihood

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On Knowledge Based Adoption Behaviour of Garole SHEEP Farmers in Sundarban Region of West Bengal, India

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Abstract:

The Garole sheep breed is unique for its adaptability and prolificacy, particularly in the Sundarban region of West Bengal, India. A study was conducted in the Sundarban region of West Bengal focusing on the knowledge and adoption behaviour of Garole sheep farmers. The study aims to understand farmers' backgrounds, assess their knowledge and adoption practices, identify constraints, and propose strategies for improvement. Data was collected from 200 farmers in North and South 24 Parganas districts using a semi-structured questionnaire or interview schedule. Key findings indicate that majority of stakeholders are between 31-50 years old, Hindu or Muslim, and belong to nuclear families with small landholdings. There were significant differences in adoption behaviour between the two districts. Factors positively correlated with knowledge and adoption includes occupation, education, land ownership, and house quality, while mass media usage and personnel cosmopolite showed negative correlations. Regression and path analyses revealed moderate predictability for knowledge and adoption levels, with factors like age, education, and innovativeness playing significant roles. Farmers heavily relied on television for information on husbandry practices, while input dealers and neighbours were crucial sources of information. Primary challenges identified include the lack of marketing facilities and livestock diseases. Overall, the study provides valuable insights into the socio-economic factors influencing Garole sheep farming, offering implications for tailored interventions and outreach programs to enhance farming practices and sustainability in the region.

Keywords:

Adoption, Garole Sheep, Knowledge, Sundarban, Behaviour

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Dietary Tryptophan Requirement of Juvenile Striped Murrel, Channa striatus based on Growth, Whole-body Composition, Haemato-Biochemical Responses and Muscle-Growth-Related Gene Expression

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Abstract:

A 60-day indoor feeding trial was conducted to quantify the dietary tryptophan requirement of juvenile striped murrel, *Channa striatus* based on growth performances, whole-body proximate composition, amino acid profile, haemato-biochemical responses and muscle-growth-related gene expression. Five fish meal and silkworm pupae meal based isonitrogenous and isoenergetic diets were formulated to contain graded levels of dietary tryptophan (3.9, 4.8, 5.6, 6.7 and 7.6 g/kg of diet). Each diet was randomly assigned to triplicate groups of 15 fish per experimental unit, which were fed thrice a day (9:00, 13:00 and 17:00 H). Graded levels of tryptophan had significant impact on growth performances and feed utilization of striped murrel. Significantly maximum weight gain, best feed conversion ratio and protein efficiency ratio was observed in fish fed tryptophan at 5.6 g/kg of diet compared to fish fed other experimental diets. The whole-body proximate composition and amino acid profile was not affected in fish fed graded levels dietary tryptophan. However, dietary tryptophan significantly affected the haemato-biochemical responses of striped murrel. The haematological values were found to be highest in fish fed tryptophan at 5.6 g/kg of diet, while the lowest values were observed in fish fed tryptophan at 3.9 and 7.6 g/kg of diet. The lowest serum glucose and cortisol values were observed in fish fed tryptophan at 5.6 g/kg of diet. The relative mRNA expression of *myoD* and *myogenin* was upregulated in fish fed tryptophan at 5.6 and 6.7 g/kg of diet than other diets, while the relative expression of myoststin was downregulated in fish fed diets with tryptophan at 5.6 and 6.7 g/kg of diet. The Second-order polynomial regression analysis of weight gain against dietary tryptophan levels indicated that the optimum dietary tryptophan requirement for maximum growth and feed utilization of juvenile striped murrel was 5.8 g/kg of diet.

Keywords:

Amino Acid, Feed Utilization, Myogenin, Striped Murrel, Tryptophan, Weight Gain

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CamScanner

Probiotic Foods: Boosting Your Gut Health Naturally

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Abstract:

Probiotic foods have garnered significant attention in recent years, emerging as a pivotal element in the pursuit of optimal health and wellness. Probiotics are live microorganisms that, when consumed in adequate amounts, confer a health benefit on the host. They are often referred to as "good" or "friendly" bacteria. Common strains include Lactobacillus and Bifidobacterium, which are naturally found in the human gut. Yoghurt, kefir, sauerkraut, kimchi, miso, tempeh and kombucha are examples of some popular probiotic foods. Yoghurt and kefir are fermented milk products whereas fermented cabbage is known as sauerkraut. Probiotic foods offer a natural and effective way to support overall health and well-being. The primary benefit of probiotic foods lies in their ability to maintain and restore a healthy balance of gut microbiota which is essential for proper digestion, nutrient absorption, and prevention of gastrointestinal disorders such as irritable bowel syndrome (IBS) and inflammatory bowel disease (IBD). It also play a crucial role in modulating the immune system. They enhance the production of natural antibodies and stimulate the activity of phagocytosis. By incorporating a variety of these foods into your diet, you can foster a healthy gut microbiome, bolster your immune system, and potentially improve mental and metabolic health. As scientific understanding of probiotics continues to evolve, these beneficial microorganisms are likely to become an even more integral part of nutrition and health strategies worldwide.

Keywords:

Probiotics, Immune system, Lactobacillus, Bifidobacterium, Gut microbiota

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Ichthyofaunal Fresh Water Biodiversity of Trai Belt Region District Lakhimpur Kheri Uttar Pradesh, India

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Abstract:

India is a mega biodiversity hot spot contributing 11.72% of globe fish biodiversity with (2800) species (marine and fresh water). Total fish production has contributed 1.07 % in Gross Domestic Product (GDP) and 5.34% contribution in agricultural GDP. Uttar Pradesh itself have 124 fish species 74 genera and 28 families and contributed about 14.11% Indian fresh water fish diversity. The present study based on the diversity of Lakhimpur Kheri district. Several species are founded during the survey of local area which included in the 10 order, 21 family and 70 species which are distributed among several water bodies located in the district. The study revealed that biodiversity of fishes was declining due to several anthropogenic and natural activities so it's needed to be conserved with several aspects.

Keywords:

Fish Biodiversity, Lakhimpur, Fisheries Diversity Conservation

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Production of Shrikhand, Fresh Skim Milk is used as a Raw Material

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Abstract:

Shrikhand is a popular fermented, sweetened, indigenous dairy product having semi solid consistency with typical sweetish-sour taste. It is very popular in the state of Gujarat, Maharashtra and part of Karnataka. Shrikhand is prepared by mixing chakka with sugar, colour, flavour, spices and other ingredients like fruit pulp, nuts etc. to form soft homogenous mass. Skim milk is heated to 85°C for 30 min, cooled to 30°C and inoculated with LF-40 culturecontaining *Lactococcus lactis subsp. lactis* and *Lactococcus Lactis* var. *diacetilactis* at the rate of 1.0-1.5%. After the required acidity of 0.8 to 1.0 is reached, the curd is taken into basket centrifuge to remove whey from the curd. The curd mass or chakka is taken into planetary mixer or scraped surface heat exchanger. Sugar at the rate of 80% w/w, calculated amount of plastic cream (80% fat) to give at least 8.5% FDM in the finished product are added and mixed thoroughly. Optional ingredients like colour, flavour, fruits, nuts etc. can also be added at this stage. Then it is packed at room temperature and stored at refrigeration temperature 50°C.

Keywords:

Shrikhand, Chakka, Skim milk, Lactic acid, Sugar, Flavour, Colour

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CamScanner

Effects of Dietary Selenium Supplementation on Growth, Bioaccumulation, Antioxidant Activity, and Gene Expression in the GIFT Strain of Nile Tilapia (*Oreochromis niloticus*)

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Abstract:

The impact of dietary selenium (Se) supplementation on growth performance and antioxidant capacity in the GIFT (Genetically Improved Farmed Tilapia) strain of Nile Tilapia (*Oreochromis niloticus*) is of significant interest due to its potential effects on aquaculture practices and fish nutritional quality. Selenium is a crucial micronutrient known for its role in antioxidant defense systems, overall growth, and development. A 60-day feeding trial was conducted to investigate the effects of dietary Se supplementation on growth performance, feed efficiency, proximate composition, bioaccumulation in liver and muscle tissues, antioxidant capacity, and blood biochemistry of GIFT. Sodium selenite (Na_2SeO_3) was added to a practical diet at levels of 0, 0.25, 0.5, 1.0, 1.5, or 2.0 mg Se kg^{-1}. Inductively coupled plasma mass spectrometry (ICP-MS) was used to determine Se levels, resulting in feed concentrations of 0.79, 1.05, 1.30, 1.80, 2.25, or 2.80 mg Se kg^{-1} diet. After 8 weeks, a significant difference in growth was observed ($p<0.05$) across the treatments. The study found that different dietary Se concentrations significantly affected Se levels in liver and muscle, expression of growth and antioxidant genes, and activities of enzymes such as catalase (CAT), superoxide dismutase (SOD), and glutathione peroxidase (GPx), as well as protease, amylase, and lipase in the liver and intestine. The highest performance was noted in fish fed with 1.8 mg Se kg^{-1} diet. These fish also exhibited significant increases in hemoglobin, leukocytes, erythrocyte count, and hematocrit values, along with a reduction in cholesterol levels. However, proximate analysis showed no significant differences. Overall, a dietary concentration of 1.8 mg Se kg^{-1} diet resulted in the best performance for juvenile GIFT and is recommended if sodium selenite is used as the selenium source.

Keywords:

Catalase, Superoxide dismutase, Glutathione peroxidase, Sodium selenite, Metabolic enzyme, Digestive enzyme, Haematological parameters

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Disposal of Battary Waste in Aquatic Environment

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Abstract:

A detailed study was conducted to characterize and removal of heavy metals from battery waste. These batteries contain several heavy metals such as cadmium, copper, lead, mercury, nickel or zinc, which are all hazardous to human health and environment. But proper disposal of battery wastes is far more important compared to battery production; but it is often a neglected issue, particularly in developing and poor countries. The conventional methods for heavy metal removal from aqueous solution of wastewater include reduction, precipitation, ion exchange, electrochemical reduction evaporation reverse osmosis and adsorption. Most of these methods involve high capital cost with recurring expenses, which are not suitable for small scale industries. Studies on effluents of aqueous solution bearing heavy metals have revealed that the adsorption to be highly effective, cheap and easy method among the physico-chemical treatment processes owing to high cost and difficult procurement of activated carbon efforts are being directed towards finding efficient and low cost materials. A detailed study was conducted to remove lead from aqueous solution by waste material. The data also follows the Langmuir and BET isotherms and their equations. The granular porcelain was used adsorbent in suspension form was filtered and filtrate was analysed for the Lead (Pb) concentration in aqueous solution with help of atomic absorption spectrophotometer using air acetylene gas. Column operations were also carried out on the actual waste for evaluation of break through capacity and lead removal from actual waste. The data collected during experiments have shown good results for different parameters, at optimum concentration (10 mg/l) for optimum pH 6, at the optimum does (400 mg/l). The percentage adsorption was maximum (99%) under these conditions.

Keywords:

Adsorption, Porcelain, Lead, Wastewater, pH, BET isotherm

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