NAVS NEWS VIBES

NATIONAL ACADEMY OF VETERINARY SCIENCES (INDIA)

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EDITORIAL

With great pleasure, I bring before you the first issue of the **NAVS News Vibes**, the new and rechristened version of the Academy's communique.

A look at the annals of the NAVS (I) revealed that the first attempt to establish a communique between the Academy and its members started in the form of an 'Information Bulletin' brought out in October 2010. Subsequently, the first official Newsletter was published in May 2011. Later, starting from 2012, four issues of NAVS Newsletter have been published annually and shared among the Members of the Academy in electronic mode. Stewarded by Professor RN Kohli, the Founder Editor, the NAVS Newsletter over the years had become the source of a unique compilation of facts and figures related to a wide variety of topics associated to veterinary sciences and beyond.

With a vision of augmenting the Academy to newer heights with a string of novel initiatives, the newly-elected Governing Council has thought of bringing out the Newsletter in print form to make the Academy's existence felt beyond the Members' mailboxes and thereby expand its visibility. The present issue in your hands is the outcome of an earnest endeavour to build on the legacy while at the same time making the Newsletter more contemporary in terms of contents, presentation and look.

Newsletter of a scientific academy is an organ meant for reciprocal communication between the Academy and its members. Additionally, it also provides an avenue for interaction among the members on issues of common interest. In the words of a hon'ble Fellow of the Academy, NAVS Newsletter has an important place in the profession by connecting Indian veterinarians from all over the world, and the onus is on the Editor for satisfying the expectations of senior and young veterinarians associated with the Academy. Well, while committed to play my role to the satisfaction of one and all, I need wholehearted support from each one of you, as worthy Fellow of the Academy, to make the newsletter serve its ultimate goal.

In this endeavour, I thankfully acknowledge the support of the Editorial Board members in enriching the contents of the Newsletter. Besides, the financial support from the benefactors to sustain the publication also warrants applause.

I am looking forward to receiving your critical comments and constructive suggestion for making the **NAVS News Vibes** more informative, enriched and vibrant in the coming times to come.

Happy Readings!

Ashok K. Pattanaik

HORIZON
THE PRESIDENT'S VIEWS & VISION

My dear Revered and Distinguished Fellows of the Academy,

I am writing this message on the eve of launching our Newsletter which henceforth shall be renamed as NAVS News Vibes.

At the outset, I deem it a privilege and honour to be elected as the President of this august body with an astounding majority. I am very grateful and obliged for the confidence, and the faith reposed on my team and me. I assure you that we shall strive hard to bring the Academy at par with the country's top academies.

I had conversed with most of the fellows during the election process, which made me realize a few revelations of utmost importance. Primarily, I will be sharing my views on these points in this message and appreciate any constructive suggestions.

There is a lot of communication gap between the Governing Council and the Fellows. The only communication we had was the Newsletter which was on online. Unfortunately, it did not have the desired effect. Hence, the Governing Council in the last meeting has decided to print the Newsletter for effective communication which shall serve as the mouthpiece of the Academy. This will be posted to all the Fellows and other important dignitaries of our profession directly, which will serve as a communication channel every quarter. The NAVS News Vibes shall highlight the activities of the Academy relating to academic programmes, brainstorming sessions, seminars, webinars and news about the veterinary profession. We have also appointed five Editorial Committee members from the five zones of the country with Dr A.K. Pattanaik as the Editor.

Besides this, the Governing Council has also decided to appoint five Zonal Coordinators for all the five zones of the country. The additional stream will further increase the network and strengthen the communication channel in penetrating the activities of the Academy.

As you know, NAVS(I) Fellowship is now recognized by ICAR and ASRB and two marks are awarded in the scorecard for interviews conducted in the ICAR system. I have also requested all the Vice-Chancellors of Veterinary Universities to include NAVS(I) Fellowship in the scorecard for recruitment of teaching and research scientists in their Universities which met with a positive response. The Governing Council has also increased the annual intake of NAVS(I) Fellows from 15 to 20 to strengthen the Academy. The Academy has also created Associate Fellowships for the young veterinarians to participate in the activities in the Academy and make it more vibrant.

I strongly feel that all the segments of the Veterinary profession, i.e. the Academy, Veterinary Council of India, Veterinary Universities, Veterinary Research Institutes under ICAR, State Veterinary Departments and the Veterinary Councils and associations at the state levels should interact and communicate with each other and work for the profession in a united manner which will strengthen this profession and take it to great heights. The Veterinary Universities represent the cream of our fraternity at the state level championing the cause of Veterinary Education, Research and Development. Similarly, the State Directors are working vociferously to improve the animal health, animal production and extension programmes related to large animals, poultry, sheep and goat. Our field veterinarians should be continuously updated with the advancements in Science & Technology made at universities through refresher programmes for a couple of weeks every year, which will update them with the

latest trends in the profession. It is also essential to have a rapprochement between research organizations, veterinary universities and the industry which contributes to the GDP of the country. My objective is that NAVS(I) should bridge the gaps and coordinate all the segments together for a synergistic effect.

I am happy to inform you that NAVS(I) has announced three awards for the year 2020-2021, viz.

1. Dr CM Singh Memorial Award
2. Young Scientist Award
3. Dr Vallabh Mandokhot Memorial Award for Outstanding Young Women Veterinarian

I have pleasure in advising you that I have announced Life Time Achievement Award for the Veterinarian of Excellence in Animal Production on my name with a corpus of Rs. 12 lakh effective from 2021. The modalities of the award shall be finalized very shortly.

Finally, I want to conclude saying that I have expressed my mind to you and shall be working towards achieving these goals as a team with our Governing Council. I shall review periodically through the media, the progress made by the Academy on a quarterly basis. I once again reiterate that we welcome any constructive suggestions from all the Fellows of the Academy which will receive serious attention and consideration that will help me in making a vision statement for the Academy.

Thanking you,
Cordially yours

(DVR PRAKASH RAO)

CORPORATE LIFE MEMBERS

AYURVET

IH INDIAN HERBS

INSTITUTIONAL LIFE MEMBERS

- Lala Lajpat Rai University of Veterinary & Animal Sciences Hisar
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- Maharashtra Animal & Fisheries Sciences University Nagpur
- Khalsa College of Veterinary & Animal Sciences Amritsar
- Bihar Animal Sciences University Patna
- Karnataka Animal, Fishery & Veterinary Sciences University, Bidar
- Sri Venkateshwara Veterinary University Tirupati
- Kamdhenu University Gandhinagar
- Brooke: An Equine Welfare Oganization

IN FOCUS LUMPY SKIN DISEASE

Lumpy Skin Disease in Large Ruminants

BM Veeregowda and T Chandrashekhar
Veterinary College, Bengaluru-560024

Lumpy skin disease (LSD) is a contagious viral disease of cattle and buffaloes caused by Capripox virus. *Bos taurus*, fine-skinned, high producing dairy breeds are more susceptible to clinical disease than zebu cattle and *Bos indicus*. It is a transboundary and exotic disease transmitted mechanically by vectors. The disease is characterized by mild febrile reaction with generalized nodule formation, not limited to the skin. The disease is of very high morbidity with prolonged convalescent phase leading to emaciation, reducing milk yield and hide quality.

LSD has been termed a "neglected disease" due to its historic natural occurrence being restricted to Africa and, occasionally, Israel. However, after its spread to the Middle East, the disease is now experiencing a resurgence of research interest following a recent and rapid spread into more northern latitudes.

A better understanding of the epidemiological aspects of lumpy skin disease virus (LSDV), host and environment interactions might help institute control and preventive measures. Epidemiological evidence suggests that the outbreak of LSD is associated with the prevalence of high insect vector population during wet summer and rainy season. Recent outbreaks in Karnataka and Maharashtra in May-July 2020 are linked to wet summer and a very high insect vector population especially in the adjoining areas of jungles and forests with water bodies around.

The transmission of LSDV occurs mechanically by biting arthropod vectors including hard ticks, biting flies and mosquitoes (the virus is transmitted via contaminated mouthparts of vectors without actual replication of the virus in arthropod cells or tissues). Clinically sick animals are the primary sources of infection to other healthy animals. LSDV can be present in the blood, cutaneous lesions, saliva, nasal discharge, lacrimal secretions, milk, semen and feeding and drinking trough, which may be sources for transmission.

Early laboratory diagnosis of LSD by PCR plays a crucial role in identifying and separating affected animals from the healthy herd. Diagnosis based on history and clinical signs need a further differential diagnosis from many similar conditions. Serology including virus neutralization test (VNT) cannot distinguish LSDV, Sheep Pox Virus, Goat Pox Virus. Serology is useful only for herd screening. Diagnosis by virus isolation and DNA sequence analysis will help identify the point source of infection. Clinical samples to be collected for laboratory diagnosis include whole blood (EDTA), skin biopsy/scabs, lymph node aspirates, ocular/nasal swabs in sterile PBS. LSD being exotic, veterinarians, para-veterinary staff, farm managers, and livestock owners need to be made aware of clinical signs, particularly the non-classical ones. Production losses in milk and hides call for vector control and strategies to be implemented at village/society level, highlighting the disease's contagious nature and importance of immediate disease reporting to the nearby veterinary institution.

Treatment of LSD is only symptomatic, aiming to prevent secondary bacterial infections. LSD affected animals are successfully treated using antimicrobials, anti-inflammatory, antihistamines for 5-7 days with fly repellants and antiseptics. Supportive therapy with vitamins and mineral mixtures would help reduce the convalescent phase and minimize production losses. Existing Goatpox and Sheeppox vaccines are reported to be very effective in controlling LSD, especially in high-risk areas.

Emergence of lumpy skin disease (LSD) in cattle in India: Epidemiological features and current control strategies

Niranjan Mishra and SB Sudhakar
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Lumpy skin disease is a re-emerging transboundary poxvirus disease of mainly cattle and occasionally buffaloes and is listed as a notifiable disease by the OIE. The economic losses occur both from direct losses due to decreased milk production, damage of animal skin, abortion, temporary or permanent sterility of bulls and death, and indirect losses due to trade restrictions and costs for laboratory diagnosis, treatment, disinfection of premises and vaccination. Natural cases of LSD have so far been reported in cattle and Asian water buffalo (*Bubalus bubalis*) and some wild ruminants. LSD causes high morbidity (up to 85%) and low-to-moderate mortality (usually 3%, occasionally up to 45%), and the severity of the disease may vary from subclinical infection to death based on the virus strain, vector prevalence, age and immune status of the host. LSD is not transmissible to humans.

The disease

The incubation period of LSD is 14-28 days in case of natural outbreaks, and the clinical signs are highly variable. The clinical disease in cattle is characterized by pyrexia, enlarged prefemoral and prescapular lymph nodes, nasal discharge, watery eyes and generalized firm flat topped papules and nodules of 0.5–5.0 cm size all over the body. A sharp drop (~ 90%) in milk yield occurs mainly during two weeks following appearance of nodular lesions. In bulls, reduced sperm motility and an increase in semen discard rate are observed. LSD is transmitted predominantly by hematophagous arthropod vectors (dipterans and ticks) mechanically, although transmission through direct contact through shared feed and water troughs have been suspected. Flies and mosquitoes have been implicated in mechanical transmission, while ticks have been shown to be capable of mechanical and biological transmission. Additionally, sub-clinically infected cattle may act as potential sources of indirect LSDV transmission through untreated animal products.

The agent

The causal agent of LSD is lumpy skin disease virus (LSDV), which along with sheeppox virus (SPPV) and goatpox virus (GTPV) belongs to the genus Capripoxvirus (CaPV) in the family Poxviridae. The LSDV is an enveloped virus and has a double-stranded DNA genome of about 151 kbp coding for 156 putative genes. Although LSDV, SPPV and GTPV share high antigenic similarity and genetic identity (~ 95%),

genome sequence analyses have shown that they are phylogenetically distinct. In field outbreaks, LSD is first suspected based on clinical signs of characteristic generalized skin nodular lesions, but confirmatory diagnosis requires OIE prescribed laboratory diagnostic tests. The molecular diagnostic tests such as capripoxvirus generic gel-based PCR and LSDV specific real-time PCR are the most commonly used tests for laboratory diagnosis of LSDV, while virus neutralisation test (VNT) and ELISA are recommended serological tests.

Geographical distribution

LSD was first recorded in Zambia in 1929 and remained restricted and endemic to southern and eastern Africa and caused severe outbreaks in the Horn of Africa, until its spread outside sub-Saharan Africa in Egypt and Israel between 1988 and 1989. Subsequently, sporadic LSD outbreaks were reported in the Middle East region. In 2012, LSD was reported in Israel, Lebanon and Turkey and in 2013, outbreaks were reported in Jordan, Iraq and Turkey, while in 2014, outbreaks were reported in Iran, Cyprus, Azerbaijan and Turkey. LSD was reported first time in Europe in Greece in 2015 and then in 2016 in seven countries of South-Eastern Europe and in Russia, Armenia, Georgia and Kazakhstan. LSD spread into South Asia for the first time in 2019 and was reported in China, Bangladesh and India. As per the latest OIE notifications, it has further expanded into South, East and South East Asia in 2020.

Incursion of LSD into India and spread

Of the several poxvirus infections affecting bovines, buffalopox outbreaks in buffaloes and cattle have been reported in India. Sheeppox and goatpox in sheep and

goat are endemic, whereas LSD in cattle was exotic to India until August 2019. A febrile nodular disease of cattle resembling LSD was first suspected and noticed in August 2019 in coastal districts of Odisha. Investigations were carried out, and laboratory tests of samples from LSD suspected animals were conducted at ICAR-NIHSAD, Bhopal. The results of virus isolation and identification and sequence analysis confirmed the involvement of field strains of LSDV in causing the LSD outbreaks in India. Following submission of report by DAHD, MoFAHD, GoI, the first occurrence of LSD in India was notified by the OIE on November 18, 2019. LSD has since then spread into 18 states, across India. However, so far, no confirmed case of LSD has been recorded in buffaloes.

Epidemiological features of LSD in India

Although the clinical signs and disease severity are highly variable, typical clinical signs of LSD have been observed in most cases and corneal opacity, pneumonia and hind limb oedema in some affected cattle. In affected bulls, nodular skin lesions on the scrotum, drop in quantity and quality of semen (severe oligospermia and azoospermia in some cases), reduced sperm motility and increase in semen discard rate are prominent signs. LSDV shedding in the semen of some naturally infected bulls has been recorded indicating potential implications of LSD in bull semen production and cattle infertility. In general, cattle of all ages, sex and breeds have been affected. During the first recorded LSD outbreaks in Odisha, an overall morbidity rate of 7.1% and no mortality has been observed. The incidences of LSD are noticed mostly during the months of summer and the wet monsoon season coinciding with the most intense blood-biting insect activity period. The available data on molecular epidemiology of LSDV strains confirmed that LSDV wild type strains were involved in the LSD outbreaks in India. Although the source of origin of LSD outbreaks in India is not definitively known at present, the phylogenetic analysis revealed that LSDV strains circulating in India are genetically more closely related to the historical NI2490/KSGP-like strains from Kenya than the strains detected in Europe or the Middle East.

Prevention and control

The three critical hallmarks of prevention and control of LSD are vaccination against LSD, restriction of cattle movement and farmer awareness. As per the OIE, vaccination is the only effective way to control LSD outbreaks in endemic countries, and the same is also true for outbreaks in non-endemic countries. As capripoxviruses are antigenically cross-reactive, both homologous LSD live attenuated vaccine and heterologous goatpox or sheeppox live attenuated vaccines have been used in various countries with different success rates. Homologous LSD attenuated vaccine has been shown to provide complete protection against LSD. In contrast, goatpox and sheeppox vaccines provide partial protection except in a few cases where similar protection levels as homologous vaccine have been recorded. However, it is recommended to carry out controlled vaccine trials in cattle prior to introducing a heterologous vaccine. Annual vaccination with live attenuated LSD vaccine is recommended, as the duration of humoral immunity is about nine months. Currently, no marker vaccine against LSD is available that allows the differentiation of infected from vaccinated animals. Restriction of cattle movement and trade in affected areas through effective legislation has shown promising results in the containment of LSD. Besides, awareness of the farmers regarding prompt reporting of the disease to veterinary departments plays an important role in the control.

Current prevention and control strategies in India

Immediately after the first notification of LSD occurrence in India by the OIE, DAHD, GoI issued advisories to all the States/UTs in November 2019 regarding the prevention and control of LSD. The suggested measures include clinical surveillance, referral of samples for LSD testing, isolation of sick animals, prohibition in the movement of infected cattle, ban of cattle trade, closure of cattle markets, disinfection of infected premises, farm biosecurity measures and vector control measures in the affected areas in various States. For therapeutic purpose, symptomatic treatment of animals with anti-inflammatory and anti-histamine preparations (NSAID), application of antiseptic fly repellant ointment, antibiotics for 5-7 days (in severe cases) and multivitamins are suggested. Besides, as an emergency preventive measure, advisories on preventive vaccination against LSD were issued by the DAHD, GOI. As per the advisory, the infected villages are to be identified so that precautionary plans are carried out in a specific area, and ring vaccination is carried out up to 5 km radius around the LSD affected village/location. All unaffected cattle and buffaloes at the age of 4 months and above have to be vaccinated with 103.5 TCID50 of goatpox virus vaccine (Uttarkashi Strain) through S/C route. Despite the severe impact of current COVID-19 pandemic on animal husbandry sector in India, efforts should be made to implement LSD prevention and control measures in the affected States with coordination of all stakeholders for immediate control of LSD to prevent losses in the Indian dairy sector.

THE ACADEMY
EVENTS & ENDEAVOURS

New Governing Council takes over

The new Governing Council took over the reign of the Academy from December 2, 2020 for the next triennium after successful completion of the electoral process and declaration of the results by the Returning Officer. The list of the newly-elected office bearers are given below:

President	: Dr D.V.R. Prakash Rao
Vice-President	: Dr A.C. Varshney
Secretary General	: Maj Gen M.L. Sharma (Retd.)
Treasurer	: Dr S.K. Gupta
Members	: Dr Ashok Kumar Dr K.P. Ramesha Dr Karam Pal Singh Dr M.P. Yadav Dr Mandeep Sharma Dr Meenakshi Prasad Dr Nem Singh Dr Rajeshwari Shome Dr Ravindra Sharma Dr S.K. Srivastava Dr S.N.S. Randhawa Dr Shailendra Tiwari Col. Dr Tej Ram Dr V.D.P. Rao Dr Vipin K. Gupta

National Webinar on AMR-Mitigation for Food Safety

National Academy of Veterinary Sciences, India organized a National Webinar on **AMR-Mitigation for Food Safety** under the theme of One Health in collaboration with Department of Animal Husbandry and Dairying (Government of India) and Ayurvet Research Foundation on October 30, 2020.

The webinar was well attended by the faculties from different Universities, Research Scientists, farmers, and industry representatives. Maj Gen Shri Kant Sharma, President, NAVS (I) welcomed the dignitaries, delegates and participants. The Chief Guest of the function, Dr Sanjeev Kumar Balyan, Hon'ble Minister of State, Fisheries, Animal Husbandry and Dairying, GoI, outlined the need of composite efforts involving ICMR, AYUSH and all stakeholders so that the indigenous knowledge based herbal and ethno-medicines could be made available at affordable cost to all animal owners and end their dependency on antibiotics. Dr Praveen Malik, Animal Husbandry Commissioner, DAHD, GoI delivered address as Guest of honour on behalf of Shri Atul Chaturvedi, IAS, Secretary, AHD, GoI. Dr Anup Kalra, Convener of the workshop, delivered vote of thanks. The proceedings of the workshop have been brought out in the form of a publication.

There were two technical sessions, namely on **'Antimicrobial resistance: status and Perspectives'** and **'AMR impact and strategies to overcome'**. Additionally, there was a **Panel Discussion** held at the end with the participation of experts and stakeholders from academia, industry and farmers organization.

Recommendations

- There is a critical need to address the threat posed by AMR to human, animal and environmental health. Antibiotics are used to protect fruits, vegetables and ornamental plants. Antibiotics residues have been detected in vegetables and the untreated water, which is an area of great concern.
- The aquaculture is complicated by the considerable number of species being cultured and the diversity of culture environmental systems and management types. It necessitates an increase in the reliance of veterinary medicines to ensure maximum production. There are threats posed by abuse, overuse and misuse of antimicrobials in the aquaculture Industry.

- Bovine mastitis management minimizing antibiotic use is also essential since milk samples screened are found positive for AMR.
- Poultry growth performance and feed efficiency are interlinked to the intestinal microbial quantity, wall structure and activity of the immune system. Several antibiotics are used in poultry feeds as growth promoters to enhance growth, improve feed efficiency and reduce the mortality. There are various substitutes such as probiotics, prebiotics, synbiotics, organic acids, enzymes, and bacteriophages available in the market to minimize antibiotics usage.
- The poultry industry grows at an average of 8 to 9% in which the layers grow at 5 to 6%, and broilers are growing at 9 to 10%. Most of the layers (~ 60%) are now on battery cages, and hence the pathogen load coming out of the floor is very much reduced.
- The broiler industry's phenomenal growth is mainly due to the large integrators who have integrated the rural farmer into the mainstream of broiler production and marketing. The rural farmer's financial strength is low, and most of these farmers consider this a subsidiary occupation and hence no infrastructure facilities are available in the poultry sheds. The study on resistance Salmonella isolated from poultry chicken meat is 23.7% as against the eggs samples of 9.63. It is mainly because of the mud flooring used by the rural farmers on which the broilers are raised for 5 to 6 weeks. Hence a prioritized consideration by the ministry is to assist the rural farmers in switching over to cement-flooring compulsorily; financial assistance for this purpose can be made from the poultry development infrastructure fund with the Animal Husbandry Commissioner as a nodal officer liaising with state directors, poultry development authorities and broiler associations.
- Provision of clean water is another major problem in the rural belt. Water sanitation with edible organic acids reduces the pathogenic load in drinking water which would effectively minimize the use of therapeutic antibiotics in poultry production.

The engagement of essential stakeholders such as veterinary pharmaceutical industry, feed manufactures, poultry- and dairy-farmers and veterinarians are imperative to achieve the objective. The agreement and collaboration between these diverse and relevant stakeholders is a significant step required at the national level.

Priorities

The strategic priorities that form the basic framework for a national plan of containment of AMR are as below.

1. There has to be improved awareness and understanding of AMR for effective communication, education and training of all field veterinarians working in the clinics including those involved in animal production.
2. There should be an ongoing development of comprehensive surveillance in the monitoring system for antimicrobial use and resistance appropriate to different national and regional contexts.
3. Encourage response and prudent use of veterinary antimicrobials in the field including development of species-specific clinical guidelines and engagement strategies for veterinarians and livestock and poultry producers, spreading knowledge on the research and the available alternatives to antimicrobial agents.
4. Establishment of a multi-sectoral steering committee for AMR containment at the state level along with technical working groups. The terms of reference for the multi-sectorial stirring committee shall be as below:
   - To oversee coordination within the health system and with other sectors.
   - Facilitate collaboration between Government, private and extension workers to facilitate synergy between existing and new AMR initiative.
   - Ensure availability of adequate infrastructure, logistics and resources for AMR containment in the state.
   - The technical working group has to look into the main areas of surveillance and AMR.

Action plan

I. Improve awareness and understanding of AMR through effective communication, education and training at the state level
   a) Consolidation of the existing information on the knowledge, attitude and practices of farmers and professionals, including those from the veterinary, healthcare, environment feed processing, pharmaceutical and hatchery of the poultry industry, including food processing. The state department of animal husbandry, dairying and fisheries, and the departments of health and family welfare, agriculture and environment shall be the active participants.

b) Review and revise the resources for in-service training of different professionals and allied services, including dairy and poultry industry.

II. Strengthen knowledge and evidence through surveillance and laboratory strengthening
   a) To develop microbiological laboratory for antimicrobial susceptibility testing at the district level and laboratories to deduce antimicrobial resistance and antimicrobial residues.
   b) To designate reference laboratories for human, animal food and environment sector in collaboration with the above departments at the state level.
   c) Establish state surveillance for AMR in animals and foods.

III. Reduce the incidence of infection through effective infection prevention and control.
   a) Establish a coordinating unit within the directorate to ensure development and implementation of infection prevention and zoonotic disease programme.
   b) To train the staff on the bio securities practices with an increased awareness for good production practices.

IV. Optimize the use of antimicrobial agents in veterinary health, dairy and food industries and establish the state surveillance system for antimicrobial use

V. Promote investments of AMR activities, research and innovation of AMR containment.

VI. Strengthen the commitment of states on AMR and their collaboration with the Ministry of Animal Husbandry at the Centre with the Animal Husbandry Commissioner as a nodal officer

Governing Council Meeting of the Academy

The newly-elected Governing Council of the Academy had its first meeting on December 3, 2020 in virtual mode. Besides the President, Vice-President, Secretary General and Treasurer, 13 members participated in the online deliberations. The outgoing President of the Academy Maj Gen Shri Kant (Retd.) attended the meeting as s Special Invitee. Dr DVR Prakasha Rao, the newly elected President, outlined his vision for the Academy in the coming triennium and declared to donate an amount of Rs. 12 lakh for the institution of a new award by the Academy to recognize outstanding veterinarians in the field of animal production. A brief of the important decisions taken during the meeting is given below:

- Institution of a new award 'Lifetime Achievement Award for Outstanding Veterinarian in the Field of Animal Production'
- Constitution of committees for the evaluation of applications received for various awards of the Academy
- Approval of the rules and regulation for administration of 'Dr Vallabh Mandokhot Award for Outstanding Young Woman Veterinarian'
- Appointment of Zonal Coordinators (through nomination by the Governing Council) to enhance the Academy's visibility and have better interaction with the Academy's Fellows from across the country. The following Coordinators were nominated:
  - Dr Lachhman Das Singla – North Zone
  - Dr D.K. Sarma – East Zone
  - Dr T.S. Chadrasekhara Rao – South Zone
  - Dr Hemant Dadhich – West Zone
  - Dr S.K. Tiwari – Central Zone
- Increase in the number of the annual intake of Fellows from 15 to 20 subject to ratification by the Governing Body of the Academy
- Appointment of Dr Ashok Kumar Pattanaik, Principal Scientist (Animal Nutrition) from ICAR-Indian Veterinary Research Institute, Izatnagar as Editor of the Academy

Announcement application for the Academy's fellowships

The Academy invites applications from eligible candidates for the award of the Fellowship, Associate Fellowship and Membership for the year 2020. Details of the eligibility, guidelines and application form are available on the Academy's website (www.navsindia.org). The applications, complete in all aspects, must reach the Secretary General on or before the last date for receipt of the applications, i.e., **March 31, 2021.**

National Academy of Veterinary Sciences (India) Wishes its members a Happy and Prosperous New Year-2021

ACADEMIA
SCHOLASTIC CONNECTIONS

All veterinary institutions of Gujrat come into the fold of Kamdhenu University

The Government of Gujarat through its official Gazette (Gujarat Act No. 15 of 2020) on October 12, 2020, has brought all the Colleges and Research Stations in the state under Kamdhenu University amending the existing Gujarat Agricultural University Act 2004 and Kamdhenu University Act 2009. After this amendment, 11 colleges and research stations related to Veterinary, Dairy and Fisheries Sciences from various State Agricultural Universities are transferred to the Kamdhenu University, Gandhinagar, Gujarat.

Training on animal disease economics in India jointly organised by ILRI and ICAR

A 3-day training on animal health economics to improve management of disease threats in India was conducted by ILRI and ICAR at ICAR-IVRI, Izatnagar during 8-10 January 2020. More than 20 researchers from various institutes of the ICAR were trained on animal disease economics and frameworks for risk analysis and risk management to improving veterinary disease prevention and control in India. Dr Habibar Rahman, ILRI's Regional Representative for South Asia, Dr R.K. Singh, Director, ICAR-IVRI and Dr Joykrushna Jena, Deputy Director General (Animal Science and Fisheries) ICAR, gave key inputs to the participants highlighting the role of economic analysis of animal diseases in reducing the impact of livestock diseases in India. Participants learned the basic concepts of animal disease economics, how to use a system dynamic model for analysing the impact of animal diseases, the economic importance of veterinary diseases, available resources and costs of veterinary activities. Dr Karl Rich and Dr Sirak Bahta, ILRI's agricultural economists, who were resource persons for the training, led sessions on decision-making and exercises on animal disease economics. Training manuals, presentations and questionnaires were later shared with the participants to help them better understand and practice animal disease economics theory after the training. The participants are expected to use the systemic dynamic model to analyse the economic impact of specific animal diseases prevailing in their regions and train their fellow scientists.

Odisha state starts work on a Livestock Master Plan in collaboration with ILRI

The state of Odisha has officially rolled-out the process of designing a Livestock Master Plan (LMP) with the support of the International Livestock Research Institute. The process started on 22 Oct 2020 with a virtual inception meeting with participation of Dr H. Rahman, Regional Representative for South Asia, ILRI, Shri R. Raghu Prasad, the Commissioner-cum-Secretary of the Fisheries and Animal Resources Department of the Government of Odisha and Dr Isabelle Baltenweck, Head of the ILRI Policies, Institutions and Livelihoods Program, among others. Livestock master plans aid in making a case for sustainable livestock investments by providing evidence on returns on investment from agriculture and livestock that the related ministries often lack. In view of the key constraints in the Odisha's livestock economy, which include inadequate feeds, high disease prevalence, and limited market linkages, the LMP will address these and other matters related to youth inclusion, women empowerment, resource management, mechanization, and financing for greater development in the sector. This evidence is essential to get financial resources for livestock development from ministries of finance, donors, and public and private investors. Livestock master plans are detailed sector analyses and investment plans, comprising a livestock sector analysis of the current situation and trends, a long-term forecast (usually 15 years) of the impact of livestock sector strategies, and a medium-term (usually five years) investment plan with commodity value chain road maps. The road maps include a vision, targets and goal posts, a strategy, a sequential plan of action, and financial and human resources budgeting. During the LMP development process, the Odisha state human capacity for quantitative livestock sector analysis and planning will also be enhanced.

FOOD FOR THOUGHT

WORLD OF THE VETS

Dog training methods help researchers teach robots to learn new tricks

With a training technique commonly used to teach dogs to sit and stay, computer scientists from Johns Hopkins University showed a robot how to teach itself several new tricks, including stacking blocks. With the method, the robot, named Spot, was able to learn in days what typically takes a month.

[https://alkhaleejtoday.co]

Genomic analysis reveals many animal species may be vulnerable to SARS-CoV-2 infection

Analysis of ACE2, the main receptor that SARS-CoV-2 uses to bind and enter cells, across 410 vertebrate species reveals that many are potentially susceptible to infection by the novel coronavirus. They include a number of endangered and threatened species, notably apes and old world primates. The study could also reveal potential intermediate hosts and animal models for the virus.

[Proceedings of the National Academy of Sciences, 2020; DOI: 10.1073/pnas.2010146117]

Swine coronavirus replicates in human cells

New research from the University of North Carolina at Chapel Hill suggests that a strain of coronavirus that has recently alarmed the swine industry may have the potential to spread to humans as well. The coronavirus strain, known as swine acute diarrhea syndrome coronavirus (SADS-CoV), emerged from bats and has infected swine herds throughout China since it was first discovered in 2016. Outbreaks of such an illness have the potential to wreak economic havoc in many countries across the globe that rely on the pork industry. The virus' potential threat to people was demonstrated in lab tests that revealed SADS-CoV efficiently replicated in human liver and gut cells, as well as airway cells. While SADS-CoV has not been known to affect humans to-date, the COVID-19 pandemic serves as a potent reminder that many coronavirus strains found in animals have the potential to infect humans as well.

[https://www.sciencedaily.com; Proceedings of the National Academy of Sciences, 2020; DOI: 10.1073/pnas.2001046117]

Evidence for use of dogs for reliable detection of COVID-19

Researchers from National Veterinary School of Alfort, France are studying the use of canines for detection of COVID-19 with their noses. The study conducted at two sites (Paris, and Beirut) used underarm sweat samples and the dogs, after training, could detect COVID-19 with a successs rate between 75 and 100 per cent. In an earlier study, the researchers had found evidence that there is a very high evidence that the armpits sweat odour of COVID-19 positive persons is different, and that dogs can detect a person infected by the SARS-CoV-2 virus.

[PLoS ONE; 2020; DOI: 10.1371/journal.pone.0243122]

Mask for cows to control methane emission and fight climate change

As per an FAO estimate, the livestock industry is responsible for a whopping 7.1 gigatons of greenhouse gasses equivalent to 14.5 percent of all carbon emissions. There have been many research going on worldwide using a plethora of additives to control methane emission from ruminants, none with a sustainable and lasting solution. A UK based start-up has come up with a solution: a mask. The mask is a muzzle-like contraption that monitors the percentage of methane being released by a cow. When the monitor detects an excessive amount of gas, it then converts the methane gas into water and carbon dioxide and releases it from the device. The company says it can reduce methane emissions in the form of burps by a total of 60 per cent. Apart from the methane-processing function, the mask also works as a smart device for cows; it tracks cattle location through a GPS chip, besides measuring feeding activity and sexual receptivity in female cattle. The device has successfully passed trials conducted in institutions in Argentina and UK including the Royal Veterinary College.

[https://www.ibtimes.sg]

New rule for humane methods in animal husbandry procedures in India

The Central Government has notified the draft Prevention of Cruelty to Animals (Animal Husbandry Practices and Procedures), which mandates using anaesthetics prior to castration, replacing archaic and painful practices such as hot branding with radio frequency identification, breeding hornless cattle instead of dehorning or disbudding, and applying behavioural principles of animal handling and restraining, and verbal and physical cues like calmly talking to and gently stroking animals instead of roughly throwing them to the ground and tying their legs with ropes. The rules also require that euthanasia be carried out only under the supervision of a registered veterinary practitioner, as per the procedure set forth by the OIE and the CPCSEA.

[https://www.timesnownews.com]

New research may shed light on how animals migrate

Researchers from University of Tokyo, Japan have made the first observations of biological magnet to reception - live, unaltered cells responding to a magnetic field in real time. This discovery is a crucial step in understanding how animals from birds to butterflies navigate using Earth's magnetic field and addressing the question of whether weak electromagnetic fields in our environment might affect human health.

[PNAS, 2021 118 (3) e2018043118; https://doi.org/10.1073/pnas.2018043118]

BEYOND THE BOUNDARIES

SISTER SCIENCES

New treatment for drug-resistant bacterial infections

A new antibacterial agent that has been engineered to essentially hide from the human immune system may treat life-threatening MRSA infections. A new article from the Thayer School of Engineering at Dartmouth provides details on the agent, which is the first lysin-based treatment with the potential to be used multiple times on a single patient, making it ideal to treat particularly persistent drug-resistant and drug-sensitive infections.

[https://engineering.dartmouth.edu/news]

Measles outbreaks likely in wake of COVID-19

Major measles outbreaks will likely occur during 2021 as an unexpected consequence of the COVID-19 pandemic, according to a new academic article published by the Murdoch Children's Research Institute. The Lancet article has called for urgent international action to prevent potentially devastating measles epidemics in the coming years. Due to COVID-19 induced restrictions, delayed vaccination campaigns in 26 countries have led to 94 million children missing scheduled measles vaccine doses, making future measles outbreaks inevitable.

[https://www.sciencedaily.com]

Gut microbiome data may be helpful in routine screening of cardiovascular disease

Previous studies have found the human gut microbiome, bacteria in the gastrointestinal tract, is associated with cardiovascular disease (CVD). This study used machine learning to analyze data from nearly 1,000 stool samples from people with and without CVD. Results show potential for developing a convenient, new diagnostic approach for CVD.

[American Heart Association Hypertension 2020 Scientific Sessions Report]

Bacteria in infants' first stool may indicate their risk of obesity

Meconium, the earliest stool of an infant, is composed of materials ingested during the time the infant spends in the uterus. A new study published in Pediatric Obesity found that the types of normal bacteria found in the meconium may predict an infant's likelihood of later developing obesity. In the study of 212 newborns, children who became overweight at 3 years of age differed in their meconium bacterial makeup from those with normal weight, having a higher proportion of bacteria in the Bacteroidetes phylum (29% versus 15%).

[https://www.sciencedaily.com; Pediatric Obesity, 2020; DOI: 10.1111/ijpo.12680]

Calcium bursts kill drug-resistant tumor cells

Multidrug resistance (MDR), a process in which tumors become resistant to multiple medicines, is the main cause of failure of cancer chemotherapy. Tumor cells often acquire MDR by boosting their production of proteins that pump drugs out of the cell, rendering the chemotherapies ineffective. Now, researchers have developed nanoparticles that release bursts of calcium inside tumor cells, inhibiting drug pumps and reversing MDR.

[Nano Letters, 2020; DOI: 10.1021/acs.nanolett.0c03042]

Smart cells: Chemists develop tool with potential to treat illness at the cellular level

Scientists advance the field of precision health with the development of therapeutic artificial cells: New research by an international team of chemists from the University of Alberta describes a new type of artificial cell that can communicate with other cells within the body with potential applications in the field of smart pharmaceuticals.

[https://www.ualberta.ca/science/news]

First 'plug and play' brain prosthesis demoed in paralyzed person

Stable recordings let brain and machine learning system build 'partnership' over time: In a significant advance, researchers from the Weill Institute for Neurosciences, University of California, San Francisco, working towards a brain-controlled prosthetic limb have shown that machine learning techniques helped a paralyzed individual learn to control a computer cursor using their brain activity without requiring extensive daily retraining, which has been a requirement of all past brain-computer interface efforts.

[Nature Biotechnology, 2020; DOI: 10.1038/s41587-020-0662-5]

Fats fighting back against bacteria

With antibiotic-resistant superbugs on the rise, a recent research in the University of Queensland shows a new way that cells are using to protect themselves - using fats as a covert weapon, and giving us new insights into alternative ways to fight infection. It was previously thought that bacteria were merely using the lipid

droplets to feed on, but these researchers have discovered these fatty droplets are involved in the battle between the pathogens and our cells. They have showed that upon infection of white blood cells called macrophages, lipid droplets move to the part of the macrophage where the bacteria are present. Lipid droplets can be used as a fuel source for mitochondria when there aren't enough other nutrients. However, during an infection, lipid droplets move away from the mitochondria and attack the bacteria instead, altering metabolism of the cell.

[https://www.sciencedaily.com; Science, 2020; DOI: 10.1126/science.abe7891]

New class of antibiotics to combat antimicrobial resistance

Researchers from the Wistar Institute, Philadelphia have discovered a new class of compounds that combine direct antibiotic killing of pan drug-resistant bacterial pathogens with a simultaneous rapid immune response for combating antimicrobial resistance.The researchers focused on a metabolic pathway that is essential for most bacteria but absent in humans, making it an ideal target for antibiotic development. This pathway, called methyl-D-erythritol phosphate (MEP) or non-mevalonate pathway, is responsible for biosynthesis of isoprenoids- molecules required for cell survival in most pathogenic bacteria. The researchers targeted the IspH enzyme, an essential enzyme in isoprenoid biosynthesis, as a way to block this pathway and kill the microbes.Given the broad presence of IspH in the bacterial world, this approach may target a wide range of bacteria.

[Nature, 2020; DOI: 10.1038/s41586-020-03074-x; https://www.sify.com]

Addressing the challenge of antibiotic-resistant bacteria through fluoride

For a long time biotechnology researchers relied on antibiotic and chemical selections to kill undesirable cells. Further, GMOs come with a containment issue; if that GMO were to get out of the lab and successfully replicate in the environment, one could not predict what traits it would introduce into the natural biological world. Now, research conducted in University of California, Santa Barbara, describes a simple method to address both the overuse of antibiotics, as well as containment of GMOs. It calls for replacing antibiotics in the lab with fluoride. It uses a common technique called homologous recombination to render non-functional the gene in a GMO that encodes a fluoride exporter, so the cell can no longer produce it. Such a cell would still thrive in the lab, where fluoride-free distilled water is normally used, but if it escaped into the natural environment, it would die as soon as it encountered fluoride, thus preventing propagation.

[https://phys.org; https://www.sciencedaily.com]

New research makes paralyzed mice walk again

Researchers from Ruhr University, Bochum, Germany, have enabled mice paralyzed after spinal cord injuries to walk again, re-establishing a neural link hitherto considered irreparable in mammals by using a designer protein injected into the brain. Spinal cord injuries in humans, often caused by sports or traffic accidents, leave them paralyzed because not all of the nerve fibres that carry information between muscles and the brain are able to grow back. The researchers managed to stimulate the paralyzed mice's nerve cells to regenerate using a designer protein. The remarkable thing about the study is that the protein is not only used to stimulate those nerve cells that produce it themselves, but that it is also carried further through the brain. The treatment that involves injecting carriers of genetic information into the brain to produce the protein, called hyper-interleukin-6 stimulates which can cause a very large number of nerves to regenerate and that is ultimately the reason why the mice can walk again. The paralyzed rodents that received the treatment started walking after two to three weeks.

[https://www.devdiscourse.com]

SPLENDOUR SHINING FELLOWS

Dr Inderjeet Singh joined as Vice-Chancellor, GADVASU

Dr Inderjeet Singh, Director Animal Husbandry, Government of Punjab has recently joined as the Vice Chancellor, Guru Angad Dev Veterinary and Animal Sciences University, Ludhiana. An alumnus of Chaudhary Charan Singh Haryana Agricultural University, Hisar, Dr Singh did his PhD in Animal Reproduction from the University of Liverpool, UK. Dr Singh has also served as the Director of the ICAR-Central Institute for Research on Buffaloes, Hisar. NAVS (India) congratulates Dr Inderjeet Singh, a Fellow of the Academy, for his unique accomplishment.

Dr V Padmanabha Reddy joined as Vice-Chancellor, SVVU

Dr V Padmanabha Reddy, Dean of the Faculty of Dairy Science, SVVU has recently joined as Vice Chancellor of Sri Venkateswara Veterinary University, Tirupati. Dr Reddy, an alumnus of College of Veterinary Science, Acharya NG Ranga Agricultural University and a Post-Doctoral Research Fellow at the University of Nebraska, Lincoln, USA has served the SVVU in many capacities before taking up this prestigious assignment. NAVS (India) congratulates Dr V Padmanabha Reddy for his commendable success.

Dr BN Tripathi joined as DDG (Animal Science)

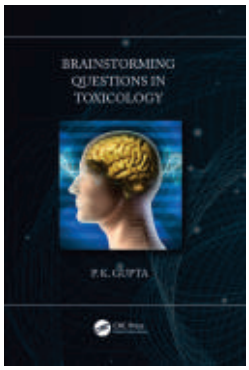
Dr BN Tripathi, Director, ICAR-National Research Centre on Equines, Hisar has recently joined as Deputy Director General (Animal Science), Indian Council of Agricultural Research, New Delhi. Dr Tripathi, an alumnus of Veterinary College, Mathura did his Masters and PhD in Veterinary Pathology from Indian Veterinary Research Institute, Izatnagar. A recipient of the International Wellcome Trust Travel fellowship, Dr Tripathi has worked as a Postdoctoral Scientist at the Institute of Animal Health, Compton, UK and a Visiting Scientist at Moredun Research Institute, Edinburgh. NAVS (India) congratulates Dr BN Tripathi, a Fellow of the Academy, for his distinctive success.

Dr RK Singh inducted as Fellow of National Academy of Sciences

Dr RK Singh, Former Director, ICAR-Indian Veterinary Research Institute, Izatnagar has recently been elected as a Fellow of the National Academy of Sciences, India (NASI) for 2020. Dr Singh has more than 32 years of synergistic experience in research, teaching and extension besides administrative and management experiences in academics, R&D, technology development/commercialization, and policymaking in the veterinary and animal science sectors. NAVS (India) congratulates Dr RK Singh, a Fellow of the Academy, for this praiseworthy attainment.

Dr PK Gupta's new book on toxicology published by CRC Press

Gupta, P.K. 2020. Brainstorming Questions in Toxicology, First edition. CRC Press, Boca Raton, FL, USA, 316 p. [ISBN: 9780367429522]



The first edition of this book by Prof (Dr) PK Gupta, Former Head of the Division of Pharmacology & Toxicology at Indian Veterinary Research Institute, covers 3500 short questions and answers, and is prepared to serve as a resource and refresher material for toxicologists working in the pharmacy, medical, clinical and forensic toxicology, veterinary, and other related fields such as environment and eco-toxicology. NAVS (India) congratulates Dr PK Gupta, a Fellow of the Academy, for this remarkable feat.

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TIDBITS
SNACKING ON SNIPPETS

Government's One Nation-One Subscription policy for scientific journals

In an ambitious move to make scientific knowledge and data available to all, the government has proposed an open data policy that will make information generated by all publicly funded research, including its results, freely accessible to everyone. More significantly, the government has also proposed to buy bulk subscriptions of all the important scientific journals across the world, and provide everyone in India free access to them. There are more than 3,000 to 4,000 high-impact scientific journals, and sources say the government might have to spend a few hundred crore rupees every year to get their bulk subscriptions. The proposals have been made in the draft Science, Technology and Innovation Policy that was released to the public on New Year's Day for comments and suggestions.

[https://indianexpress.com]

Inaugural issue of National Police K-9 Journal lunched

The inaugural issue of the National Police K-9 Journal was released by the Union Home Minister Shri Amit Shah on Jan 2, 2020. It is the first such publication in the country on the subject of Police Service K9s (PSKs) i.e. police Dogs. A special 'Police K9 Cell' was established in November 2019 under the Police Modernization Division of the Ministry of Home Affairs with the mandate of mainstreaming and augmentation of Police Service K9s in the country. The publication of the Police K9 Journal is another step in creating an ecosystem in the country to train and learn on augmenting this vital resource. The journal comprises of different section in Hindi and English. Apart from Force personnel, few foreign experts of eminence have also contributed their articles in the inaugural issue. It is a biannual journal which will be released in April and October every year.

[https://pib.gov.in]

Pigeion Joe's maiden flight from Oregon to Melbourne

A racing pigeon name Joe, has survived an extraordinary 13,000-kilometer (8,000-mile) Pacific Ocean crossing from the United States to find a new home in Australia. The bird that arrived in a Melbourne backyard on Dec. 26 had disappeared from a race in the U.S. state of Oregon on Oct. 29, 2020. The Australian Agriculture Department, which is responsible for biosecurity, said the pigeon was not permitted to remain in Australia because it could compromise Australia's food security and our wild bird populations. It poses a direct biosecurity risk to Australian bird life and poultry industry. Now authorities consider the bird a quarantine risk and plan to kill it (?).

[https://timesofindia.indiatimes.com]

Murrah buffalo sells for record Rs 51 lakh

The highest milk yield record-holder Murrah buffalo 'Saraswati' has made yet another world record; the black beauty has sold for Rs 51 lakh, the highest recorded cost for a buffalo. Owned by a farmer of Hisar, Saraswati had won the beauty contest held in Maharashtra last year. She has set a world record in milk yield by giving 32.066 kg milk in a day at the 14th PDFA International Dairy and Agri Expo 2019 held in Ludhiana.

[https://www.tribuneindia.com]

EPITAPH
GONE YET NOT FORGOTTEN

Dr Sushiel Agrawal
05.03.1949–13.03.2020
Honourary Fellow of NAVS(I)
Chairman of Indian Herbs,
A world leader in the development of Animal Health Care Products

Dr Honnegowda
24.03.1945–13.05.2020
Fellow of NAVS(I)
A noted Pharamocologist &
Former Dean, Veterinary College
Bengaluru

Dr WPAB David
Died on: 13.08.2020
Fellow of NAVS(I)
Former Director
of Clinics, Madras
Veterinary College
TANUVAS, Chennai

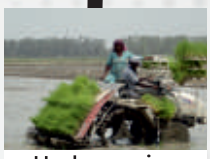
Dr PN Khanna
14.09.1936–09.11.2020
Fellow & Former Vice-President Governing Council of NAVS(I)
A noted VPH Specialist,
Former Joint Director,
CADRAD, IVRI, Izatnagar

INTEGRATION OF LIVESTOCK AND AGRICULTURE FOR SUSTAINABILITY

R & D Lab

Hydroponics Fodder

Vermicompost Promotion



Hydroponics Paddy

INITIATIVES FOR 1 HEALTH

One Health is "the collaborative efforts of multiple disciplines working locally, nationally, and globally to attain optimal health for people, animals and our environment".

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Awareness Program

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