



# NAVS NEWS VIBES

NATIONAL ACADEMY OF VETERINARY SCIENCES (INDIA)

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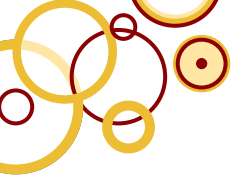
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## EDITORIAL

### Feed safety for safe food: miles to go ...

There exists a robust relationship between feed quality and food safety because animal feed plays a crucial role in human food and nutrition. With the quantitative availability of animal feed to meet the projected demand for foods of animal origin (milk, meat, egg, etc.) notwithstanding, the quality of the feed is of utmost importance to make the foods of animal origin safe for consumers. Hence, the challenge is not only to meet the demand for higher feed production but also to ensure that it is aligned for safe food for human health.

The safety and quality of feed could be compromised at all stages of feed production, starting from agricultural practices, processing, transportation, storage and usage by varied nature and number of contaminants. Typical contaminants could be chemical (heavy metals, dioxins, mycotoxins, pesticide residues, etc.), biological (Salmonella, TSE agent, viruses) and even physical in nature. The entry of many of these contaminants has become inevitable due to the nature of agro-industrial practices and processes involved in the feed production, including environmental repercussions. This calls for measures to reduce the levels of contamination to acceptable limits.

Although the importance of feed safety for food safety is well recognized and organizations like FAO and WHO have formulated strategies and guidelines to achieve this, this is easier said than done. For example, while there are stringent monitoring systems backed by appropriate guidelines and legislation to ensure feed-food safety in countries like the USA and European Union, etc. many other countries have yet to develop a framework for a sustainable solution to the issues. In India, the FSSAI has initiated a process to make it mandatory for commercial feeds/feed materials intended for food-producing animals to comply with the relevant BIS standards. But there are issues raised by feed manufacturers for accepting these standards. More importantly, the country should have a robust database built through extensive in-house research to finalize the guidelines, especially the maximum permissible limits for various categories of contaminants.

Stringent monitoring and evaluation of all steps involved in the field-to-fork continuum across the feed-food chain backed by scientifically defined guidelines, certification and legislation are vital steps to monitor feed and food safety. Hence, efforts must be made to align the feed and food production systems with a synchronous safety framework backed by a system of legislation, certification and surveillance.

**Ashok K. Pattanaik**

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## HORIZON

### THE PRESIDENT'S VIEWS & VISION

Revered and Distinguished Fellows,  
Warm Greetings.

At the outset, I congratulate and thank Dr Inderjeet Singh, Vice-Chancellor, GADVASU for becoming an Institutional Life Member, and Dr PV Seshiah, Chairman & Managing Director, International Health Care Ltd., and Dr Victor Suresh, Director, Bentoli Agrinutrition India Pvt Ltd., for becoming Corporate Members of the Academy. I heartily reciprocate their gesture and want them to participate in the activities of the Academy.

I take this opportunity to thank OIE for associating the Academy in the 'OIE Virtual Workshop for Veterinary Education Establishments in India & Special Seminar on AMR' held during June 9-11, 2021. I thank the National Coordinator for the event, Dr Suresh S Honnappagol, Former Animal Husbandry Commissioner, for giving me the opportunity to present the Academy's views through an invited talk. I suggested to Dr Honnappagol that NAVS (I) should be made a partner in all future OIE projects in India.

We had our Governing Council (GC) meeting on 5 July 2021, which was very well attended by our members. The GC has complemented Dr Vishnu Sharma, Vice-Chancellor, RAJUVAS, for improving the scorecard for NAVS Fellowship from the perspective of faculty from veterinary universities and colleges; this will encourage more teachers from state universities to apply for the Fellowship. However, to bring in veterinary scientists working in the non-veterinary departments such as the Ministry of Science and Technology and Department of Biotechnology, etc., we have formed a small committee under the chairmanship of Prof. AC Varshney to quickly review the scorecard and put it before the GC in its next meeting for approval.

We have also constituted a committee under the chairmanship of Prof AK Srivastava, Member ASRB, to review the scorecards for the Dr CM Singh Award and the Young Scientist Award. The same committee shall also design the criteria and scorecard for the 'Dr DVR Prakash Rao Life Time Achievement Award-cum-Smt. Sundari Prakash Rao Memorial Endowment Lecture in Animal Health and Production' and finalize the scorecard by 31st December 2021.



It was decided to organize the Academy's convocation using the virtual platform somewhere in September 2021. We have requested Hon'ble Union Minister for Fisheries, Dairying and Animal Husbandry (MoFD&AH), Shri Parshottam Rupala, to be the Chief Guest of the Convocation and Hon'ble Minister of State MoFD&AH, Dr Sanjeev Kumar Balyan as the Guest of Honour. Both of them have accepted our invitation.

During the meeting with Hon'ble Union Minister for MoFD&AH Shri Parshottam Rupalaji on 28th July 2021 at his camp office in New Delhi, I have appraised him about the Academy's contribution to the profession and the bottlenecks we are confronted with for achieving our targeted growth. Subsequently, all our Executive Council Members met Hon'ble Minister of State Dr Sanjeev Kumar Balyan. We have represented to him specifically about the problem of not having a proper office for the Academy. We requested him to provide us with two rooms in DMS Complex, with an option to use the conference hall as and when needed, as temporary office space until such time we move into our permanent office to be built by VCI in the land allotted by the Government. We are following up on the matter with the concerned authorities, and we hope to get a proper office space soon.

I met Dr Ravindra Reddy, Vice-Chancellor, PVNR Veterinary University, Hyderabad, on August 16, 2021 and requested him to become an Institutional Member of the Academy. He has positively responded to my request.

I take this opportunity to thank you for your cooperation and invite all of you to attend the virtual convocation of NAVS (I) in September 2021. The link of the convocation shall be sent to everybody by email available in the records of NAVS (I). I also request Fellows to advise the Academy's office if any change in the email ID.

Thanking you,  
Cordially yours,

**(DVR PRAKASH RAO)**

## THE ACADEMY EVENTS & ENDEAVOURS

### NAVS President's meetings with Dignitaries

#### Meeting with Union Minister, MoFAH&D

The President of the Academy, Dr DVR Prakash Rao, accompanying Maj Gen M L Sharma (Retd), the Secretary General, had a meeting with the Hon'ble Union Minister of Fisheries, Animal Husbandry and Dairying Shri Parshottam Rupala on July 28, 2021. While congratulating on his new appointment, Dr Rao has apprised the Minister of the Academy's potential role in providing professional inputs in supporting the Ministry's plans and policies. The Minister was given a representation on critical issues faced by the Academy besides the cases pending with the DAHD in the areas where the Academy has submitted the policy documents. He also raised the issue of funding for the Academy with the Minister from DAHD. The Minister has assured to look into the issues.



#### Meeting with MOS, MoFAH&D

The President of the Academy, Dr DVR Prakash Rao, and the Executive Council Members Maj Gen ML Sharma, Dr AC Varshney, Dr SK Gupta and Dr AK Pattanaik met Hon'ble Minister of State for Fisheries,



Animal Husbandry and Dairying Dr Sanjeev Kumar Balyan on July 29, 2021. While seeking his support for the Academy's activities, a special mention was made regarding the constraints for office space and request for providing an alternate space for the Academy in the DMS Headquarters building in Delhi. The Minister could understand the gravity of the problem and instantly initiated actions for helping the Academy.

### NAVS(I) National Webinar-I: History, Outcomes & Expectations

The first National Webinar of the Academy was successfully held on April 9, 2021. The event was attended by all GC Members, Former Presidents, Fellows and was moderated by Dr SS Honnappagol.

Dr DVR Prakash Rao, the President of the Academy, gave a summary of the genesis of the Academy and the outcomes so far. He emphasized the need to integrate activities of all the professional bodies like VCI, IVA, NAVS and several other professional societies for the profession's progress. Maj Gen ML Sharma (Rtd), the Secretary General, shared the history of the 27 years old academy founded by Late Dr CM Singh. He stressed the need for developing a Vision Document covering the strategic plans of the academy.

Subsequent deliberations saw important inputs from the past Presidents, namely Dr SK Ranjan, Dr MP Yadav, Dr KML Pathak and Maj Gen Shrikant (Retd), in the form of sharing the achievements during their times while highlighting the issues the Academy should focus on in the time to come.

Important feedbacks and ideas were also expressed by Dr ML Madan, Dr PK Uppal, Dr Indrajeet Singh, Dr NH Kelawala, Dr Vishnu Sharma, Dr Ashish M Paturkar, Dr BN Tripathi, Dr Praveen Malik, Dr N Kondiah, Dr AC Varshney and Dr Ravinder Sharma among others.

The followings were the key recommendations of the webinar:

- o The Academy should take the lead in augmenting connectivity and integrating the activities of the Academy with that of the VCI, IVA and all other professional associations working for the veterinary profession.
- o The Academy should bring out short-term (2025) and long-term (2050) Vision Documents to laid the framework for the future endeavour of the Academy and the profession.
- o Efforts should be initiated to streamlining the future election processes for the Governing Council through digital (online) mode.



- o The Academy, in collaboration with other professional bodies, should voice for the establishment of the Indian Council of Veterinary & Fisheries Research (ICVFR).
- o The Academy should assess the professional (veterinary) human resources need of the country while at the same time working for issues related to the Paravet regulation.
- o The possibility of getting the veterinary education out of the ambit of National Education Policy (NEP), as has been done in Medical and Law education, should be explored by coordinating with the VCI.
- o The vision & mission and the objectives of the Academy should be revisited, and the website updated.
- o Efforts should be made for the recognition of the Academy by the Ministries of Agriculture & Farmers Welfare and Fisheries, Animal Husbandry & Dairying, GoI, and other related authorities for resource mobilization and support.



### Governing Council Meeting of the Academy

The 5th Governing Council (GC) meeting of NAVS (I) was held on 05 Jul 2021 at 2.00 PM through virtual mode. All the GC- and Ex-Officio-members attended the meeting with Maj Gen Shri Kant (Past President), Dr SS Arya (CEO, ASCI) and Brig JS Dharamadheeran (CEO, Brooke India) as special invitees. The followings were the key issues discussed during the meeting.

The applications of Guru Angad Dev Veterinary & Animal Sciences University (Ludhiana) and M/s Bentoli Agri Nutrition India Private Limited (Chennai) and M/s International Healthcare Limited (Vijayawada) for Membership of the Academy were accepted.

Following the successful participation of the GC Members and invited presentation by the President, NAVS (I), in the recently held OIE Virtual Workshop for Veterinary Education Establishments in India, Dr SS Honnappagol, National Coordinator for OIE, was requested to invite the Academy as a participant in future OIE projects. Further, Maj Gen ML Sharma (Retd) was nominated to interact with Dr MI Barbaruah (FAO Consultant) in an FAO project on Veterinary Para Professionals.

The meeting also deliberated on the following points:

- o Amendment of Scorecard of NAVS Fellowships: A committee consisting of GC members under the chairmanship of Prof AC Varshney was constituted to go through and finalize the report submitted by the earlier committee headed by Dr Vishnu Sharma, Vice-Chancellor, RAJUVAS. The committee was

- requested to study the revised scorecard, suggest changes, and submit the final version by 31 Jul 2021.
- o Inclusion of Remount and Veterinary NCC syllabus in BVSc & AH curriculum: Maj Gen Anil Rana, Rep of DGRVS, gave a presentation justifying the inclusion of NCC Syllabus in BVSc curriculum. The President VCI, Dr Umesh Sharma, assured the house that this issue would be taken up in the forthcoming meeting of VCI for favourable consideration.
- o Regulation of Veterinary Para-professionals: Dr SS Arya, CEO, ASCI, gave a presentation on the urgency of Regulation of Veterinary Para-professionals by a statutory body given mushrooming of Para-vet Training Institutions across the country. Dr Umesh Sharma, President VCI, assured the house that regulation of veterinary para-professionals would be taken up in the forthcoming VCI meeting for favourable consideration.
- o Proposal to support the international organisation *Action for Animal Health*: Brig JS Dharamadheeran (Retd) CEO, Brooke India, gave a presentation justifying the support of the Academy to the Action for Animal Health, an international organisation working for seeking support from Govt agencies for allocation of funds to promote animal health. The GC members unanimously accepted the proposal.
- o Adoption of Avian Influenza Vaccination Policy in India: It was decided to organize a webinar by inviting various stakeholders to deliberate on the pros and cons of Avian Influenza vaccination and to formulate a Policy Document for submission to DAHD, Min of Fisheries, Animal Husbandry and Dairying.
- o Revision of NAVS (I) Rules & Regulations: Maj Gen Shri Kant (Past President, NAVS) presented the salient changes which need to be made and recommended that this issue requires further deliberations involving Fellows of the Academy from across the country. It was decided to conduct a webinar to deliberate and finalise the rules and regulations of the Academy.

## Other important decisions

- o The last date of receipt of applications for the Academy's Fellowship, Associate Fellowship and Membership for the year 2020 (period to be covered up to 31 Dec 2020) is extended from 31 Jul 2021 to 31 Dec 2021.
- o A committee consisting of Dr AK Srivastava (Chairman), Dr AC Varshney, Dr SK Gupta, Dr AK Pattanaik and Maj Gen ML Sharma (Members) was constituted to review the scorecards of Dr CM Singh and Young Scientist Awards and to formalize the criteria and suggest the scorecard of Dr DVR Prakash Rao Life Time Achievement Award cum Late Smt Sundari Prakash Rao Memorial Endowment Lecture in Animal Health & Production.
- o The applications for all four awards (other than Fellowship, etc.) of the Academy for 2021 (period to be covered up to 31 Dec 2021) will be called for to reach the Academy's Office by 31 Jan 2022.
- o Given the prevailing COVID-19 pandemic situation, it will not be possible to organise the Convocation soon. Hence, it was decided that the Convocation be organised through Academy's Virtual Platform during Sep 2021.
- o Relaxing the restrictions of proposing/seconding the applications for NAVS (I) Fellowship, it was decided that there will be no restriction/limit of proposing or seconding the new applications by the Fellows.

## NAVS fellowships: change in the last date for receiving applications

Considering the prevailing COVID-19 pandemic situations, the last date for receiving applications for the Fellowship, Associate Fellowship and Membership has been extended till Dec 31, 2021. Details of the eligibility, guidelines and application form are available on the Academy's website ([www.navsindia.org](http://www.navsindia.org)). The applications, complete in all aspects, must reach the Secretary General on or before the last date.

## DISCLAIMER:

The views expressed by various authors in this publication are their own and not necessarily that of the NAVS(I). Further, news items related to selected scientific and academic advances published in this newsletter are sourced from varied sources, including scientific journals, newspapers and websites, etc. They are solely meant for developing educational awareness among the members of the Academy.

## THE ACADEMIA SCHOLASTIC CONNECTIONS

### OIE Virtual Workshop for Veterinary Education Establishments (VEE) in India & Seminar on AMR

The World Organisation for Animal Health (OIE), in association with the Department of Animal Husbandry & Dairying, MoFAHD and Veterinary College, Bengaluru (KVAFSU) had organized the OIE Virtual Workshop for VEE in India and a Special Seminar on AMR during June 9-11 2021. Prof Dr SS Honnappagol, Former AHC & VC, was the National Coordinator for both events. A total of 310 participants from SVUs, Veterinary Colleges, VCI, State Veterinary Councils, NAVS(I) and research scholars attended the two-day event. Thirty-seven invited speakers made presentations on the assigned topics in five different sessions besides panel discussions by panellists from various organizations in India and abroad. This type of virtual workshop for VEEs in the country was the first of its kind and was very useful to the participants.

### World Milk Day Organized by IDA South Zone

On the occasion of World Milk Day, the Indian Dairy Association, South Zone, organized a webinar on June 2, 2021, on the topic 'Milk as a modulator of immunity'. The guest speaker was Dr Surendra Nath (Retd. Principal Scientist, NDRI, Bengaluru) who updated the latest information on the role of milk as a natural food. More than 100 participants attended the event. Shri CP Charles, Chairman of IDA South Zone, presided over the function; he briefed about the present and future challenges of Indian Dairy. Dr NKS Gowda (Secretary) and Dr KS Roy (Treasurer) of IDA South Zone coordinated the event.

### GDVASU Organized a Workshop on Entrepreneurship

Guru Angad Dev Veterinary and Animal Sciences University, Ludhiana, organized a workshop as a part of the World Bank-funded NAHEP program of ICAR.

The program had a special lecture by Dr DVR Prakash Rao, Chairman and Managing Director of Prakash Foods and Feed Mills (P) Ltd. and President, NAVS(I) on the topic 'Entrepreneurial opportunities for vets'. Dr Rao sharing his journey as a successful entrepreneur, highlighted the need for inculcating entrepreneurship development among the budding veterinary professionals.

The program was presided by Dr Inderjeet Singh, the Vice-Chancellor of the university, with Dr Raj Sukhbir Singh and Dr Randhir Singh as Organizing Secretary.





## IN FOCUS

### ANTIBIOTIC RESISTANCE

#### Recent strategies for combating antibiotic resistance

**PK Verma and Maninder Singh**

Faculty of Veterinary Science and Animal Husbandry, SKUAST-J, RS Pura-181 102

Since their discovery in 1900, antibacterial agents have been the best strategies for managing bacterial infectious diseases. However, the indiscriminate and non-judicious usage of antibacterial agents has led us to a crossroad as the effectiveness of currently used antimicrobials is decreasing substantially, what has come to be known as 'antimicrobial resistance'.

Although the development of resistance to antimicrobial drugs is a natural phenomenon, the inappropriate use of antimicrobial drugs has accelerated resistance development. In the USA, antimicrobial resistance is responsible for economic losses of 20-35 billion dollars annually.

#### Classification of antibiotic resistance

Antibiotic resistance can be classified into two types – primary and secondary resistance.

*Primary resistance:* The primary resistance is because of the pathogen's intrinsic (natural) mechanisms that give the pathogen resistance to the administered drug e.g., the inability of the drugs to pass through Gram-negative cell wall or extrusion of the drug through chromosomally encoded active exporters in *Pseudomonas*. Intrinsic resistance is expressed by all the members of a bacterial species as it is natural to the bacterial species.

*Secondary resistance:* Also known as acquired resistance, and secondary resistance is used to describe the resistance that only arises in an organism after exposure to the drug. So acquired resistance is due to changes in an initially susceptible population. This acquisition can happen in two major ways: (i) mutations in the genome, and (ii) horizontal gene transfer through transformation, transduction and conjugation. There are three major types of resistance mechanisms that can be acquired: (i) reduced intracellular accumulation of the drug by the reduced influx and/or increased efflux of the drug, (ii) inactivation of drug by enzymes, and (iii) modification in the target of drug which may happen due to mutation in target site (e.g. mutation in DNA gyrase in case of fluoroquinolones resistance) and alteration in target site such as alterations in penicillin-binding proteins in *Staphylococcus aureus*.

#### Recent strategies to overcome multidrug resistance (MDR)

The major strategies which are being explored to overcome MDR include (i) nanoparticles (NPs) with desired physicochemical properties, (ii) phytochemicals as NPs and encapsulating materials for antimicrobials agents, and (iii) efflux pump inhibitors.

*Application of the nanoparticles (NPs):* The failure of most of the antimicrobials therapy are either due to insufficient concentration at the site of action or alteration in the target binding site within the pathogen. NPs (atomic or molecular scale particles of size 0.2–1 nm), which were discovered in 1974 by Norio Taniguchi, a Japanese Scientist, has wide applications in biosciences, including drug delivery. Due to their physicochemical properties, NPs naturally overcome the cellular barriers and ensure antimicrobials accumulation in sufficient concentration at the target site. Additionally, some NPs also have potent antimicrobial properties and encapsulation of antimicrobials with NPs produces additive or synergistic potential. NPs encapsulating antimicrobial agents improve antimicrobial agents' solubility, bioavailability, targeted and controlled release with reduced doses, thus lowering the chances of development of resistance. Various NPs are being explored for drug applications such as metal NPs, chitosan NPs, and nitric oxide-releasing NPs. In metal NPs such as silver NPs, gold NPs, zinc oxide NPs, copper oxide NPs, iron oxide NPs, various antimicrobials have been used in encapsulation with increased potency and reduced dose of antimicrobials.

*Phytochemical as NPs:* Phytochemicals are naturally designed chemicals having diverse pharmacological potential, including potent antimicrobial property. Phytochemicals have been shown to have nanoparticles size and have shown promising antimicrobial activities, like synthetic chemicals but with some limitations. Applications of phytochemicals as nano-formulations are capable of controlled and sustained release of phytochemicals which minimize dosage requirements. Further, phytochemicals NPs can be attached with antimicrobials such as fluoroquinolones,  $\beta$ -lactams etc., based on the functional groups of phytochemicals.

Phytochemical NPs (curcumin, catechin, silymarin, epicatechin and chitosan, etc.) encapsulated along with antimicrobials has enhanced antibacterial potency, antibacterial spectrum with reduces antimicrobial dose and toxicity in the host.

*Efflux pump inhibitors (EPIs):* In MDR bacteria, the over-expression of efflux pumps contributes to the reduced susceptibility by decreasing the intracellular concentration of antibiotics. Various phytochemicals have been reported to be potent efflux pump inhibitors (EPIs), e.g., reserpine, carnosol, porphyrin, rutin, genistein, kaempferol and quercetin. The research is in progress to identify EPIs which can be used in the pharmaceutical industry for broad applications in combating the MDR.

**Conclusions:** The failure of the majority of the antimicrobials therapy is either due to insufficient concentration at the site of action or alteration in the target site within the pathogen. The use of NPs, phytochemicals as NPs alone or coupled with antimicrobials and efflux pump inhibitors are the emerging strategies that may help in overcoming these barriers. The research is in progress to identify phytochemicals having the potential to combat MDR.

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## SPLENDOUR SHINING FELLOWS

### Maj Gen (Dr) Shri Kant conferred with the Fellowship of NADS (India)

Maj Gen (Dr) Shri Kant, Former Vice-Chancellor of the Lala Lajpat Rai University of Veterinary and Animal Sciences (LUVAS), Hisar, has been conferred with the Fellowship of the National Academy of Dairy Sciences (India) during the convocation of the Academy held virtually on May 26, 2021. The honour comes in recognition of his efforts to uplift the veterinary profession in India and his significant contribution to the military farm sector of the Indian army. He is the only officer from the RVC of the Indian army to receive this honour. NAVS (India) congratulates Maj Gen Shrikant, a Fellow and former President of the Academy, for this commendable achievement.



### Dr A.K. Pattanaik received the Fellowship of NADS (India)

Dr Ashok Kumar Pattanaik has been conferred with the Fellowship of the National Academy of Dairy Sciences (India) during its virtual convocation on May 26, 2021. Dr Pattanaik, a postdoc from the University of Adelaide and a recipient of the Fulbright-Nehru Fellowship for advanced research at the University of Illinois, is credited with successfully launching a research programme in Pet Nutrition for the first time in the country. He is one of the Founder Editors and currently Editor-in-Chief of Animal Nutrition and Feed Technology journal. NAVS (India) congratulates Dr AK Pattanaik, a Fellow and the Academy's Editor, for this laudable achievement.



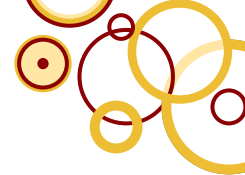
### Book by Dr MP Yadav's group ranked 51st in the '100 Best Virology Books of All times'

Malik, Y.S., Singh, R.K. and Yadav, M.P. (Eds.) 2019. *Recent Advances in Animal Virology*, Springer Singapore, 471 p. [ISBN: 978-981-13-9072-2]

The *Book Authority*, which identifies and rates the books recommended by thought leaders and experts worldwide, has published a list of '100 Best Virology Books of All times'. The above book by Dr Yadav's group has been adjudged to get 51<sup>st</sup> place with a rating of 4.13 out of 5.0. This book discusses the prominence and implication of the viral diseases that are a major threat to animals around the globe. This book offers detailed and up-to-date information on viral diseases in livestock and poultry, and features, among other aspects, the challenges posed by emerging and transboundary viral infections and the economic impact of viral diseases with a focus on state-of-art, molecular tools for the development of diagnostics, prophylactics and therapeutics in the global context. NAVS (India) congratulates the authors for this commendable international recognition.







## FOOD FOR THOUGHT

### WORLD OF THE VETS

#### Study finds drinking milk could reduce the risk of heart disease

A new study published in the International Journal of Obesity has found that drinking milk daily could lower the risk of heart disease. Conducted by researchers from the University of South Australia in partnership with the University of Reading used a genetic approach to investigate casual relationships between milk consumption and risk of cardiovascular disease. The first such study using the *LCT* gene variant as a genetic instrument confirmed the causal association between high milk consumption and lower total- and LDL-cholesterol in the combined meta-analysis. Using data from more than 400,000 people, the researchers found an inverse association between high milk consumption and blood cholesterol and blood lipid levels indicative of a lower risk of heart disease.

[Source: <https://www.nature.com/articles/s41366-021-00841-2>]

#### Cats more at risk of COVID-19 infection than dogs?

A recent study presented at the European Congress of Clinical Microbiology and Infectious Diseases talks about the vulnerability of cats and dogs in contracting the COVID-19 virus. The study at Utrecht University, using data from 156 cats and 154 dogs from 196 households, where the owners tested positive for the COVID-19 virus in the past 2 to 200 days, found that 17.4% of cats and 4.2% of the dogs were tested positive for antibodies. However, the authors concluded that the main concern is not the animals' health – they had no or mild symptoms of Covid-19 – but the potential risk that pets could act as a reservoir of the virus and reintroduce it into the human population.

[Source: <https://www.timesnownews.com>]

#### US study finds potential dog food link to canine heart disease

A new study has highlighted research by the Food and Drug Administration (FDA) linking grain-free dog foods to canine dilated cardiomyopathy (DCM). Canine DCM is a deadly disease of a dog's heart muscle and results in an enlarged heart and weak contractions. The disease is primarily linked to a genetic predisposition in certain breeds, including Doberman Pinschers, Great Danes, Boxers and Cocker Spaniels. Diets reported to be associated with DCM, often labelled “grain-free”, usually contain certain ingredients, including peas and potatoes, which are used to replace other ingredients such as rice or corn. Upon detailed analysis using foodomics

approach, researchers from Tufts University found that the ingredient most strongly linked to suspect compounds was peas. However, according to the FDA's Center for Veterinary Medicine, because legumes and pulses have been used in pet foods for many years, there is no evidence to indicate they are inherently dangerous” rather the problem may be one of quantity.

[Source: <https://www.theguardian.com/>]

#### Puppies are born with a knack for reading human gestures

Dogs are born with an innate ability to understand that humans are communicating with them and trying to cooperate with them, reveals a study on cognition at Duke University in North Carolina. Dog puppies are born with a knack for reading human gestures, like pointing towards food, even with no specific training, unlike wolf puppies. The findings using several cognitive tests comparing the wolf- and dog-pups support the ‘domestication hypothesis,’ or the theory that dogs’ wolf ancestors were selected for their friendliness and attraction to humans. Over generations, these animals passed down their cooperative genes, eventually becoming domesticated dogs. These results are consistent with the idea that domestication enhanced the cooperative-communicative abilities of dogs as selection for attraction to humans altered social maturation.

[Current Biology; <https://doi.org/10.1016/j.cub.2021.06.051>]

#### Microbes in cow rumen can help recycle plastic

Researchers from University of Natural Resources and Life Sciences, Vienna, found that microbes from the cow rumen could degrade not only polyethylene terephthalate (PET) but also two other used in compostable plastic bags besides polyethylene furanoate (PEF), made from renewable, plant-derived materials. Through their herbivorous diets, cows consume a natural polyester produced by plants, called cutin. Cutin makes up most of the cuticle, or the waxy outer layer of plant cell walls, hydrolyzed by a class of rumen enzymes called cutinases. Going by the analogy that PET shares a similar chemical structure to cutin, the researchers, through *in vitro* studies involving measurement of the byproducts released by the plastics, could show that the rumen liquor degraded all three kinds of plastic, more so the PEF. Looking forward, the team wants to fully characterize the plastic-eating bacteria in the rumen and determine which specific enzymes the bacteria use to break down the plastics.

[Source: <https://www.livescience.com/>].

**BEYOND THE BOUNDARIES** **SISTER SCIENCES**
**Mouse sperm freeze-dried in space for six years gives birth to healthy babies**

A Japanese researchers' group found mouse sperm freeze-dried and exposed to high levels of cosmic radiation for nearly six years produced 'healthy, normal' offspring. Researchers freeze-dried mouse sperm samples from 12 mice, sealed them within small lightweight capsules and transported them to the International Space Station (ISS), where the samples were stored for varied periods. After five years and ten months in space, the portion of the samples returned to Earth were rehydrated and injected into fresh mouse ovary cells. After transferring them to female mice, the mothers became pregnant and eventually gave birth to healthy baby mice, the 'space pups'. The team also determined the quantum of radiation the samples absorbed using RNA sequencing and found that the ISS trip did not result in DNA damage to the sperm nuclei.

[*Science Advances*; DOI: 10.1126/sciadv.abg5554]

**Study links mothers' use of paracetamol during pregnancy to autism in kids**

An epidemiological study of more than 70,000 children in six European cohorts has linked symptoms of attention deficit hyperactivity disorder (ADHD) and autism spectrum conditions (ASC) to the mothers' use of paracetamol (acetaminophen) during pregnancy. The study led by the Barcelona Institute for Global Health revealed that children exposed to paracetamol before birth were 19 per cent more likely to develop ASC symptoms and 21 per cent more likely to develop ADHD symptoms than children who were not exposed. The researchers concluded that considering all the evidence on the use of paracetamol and neurological development, and agreeing with previous recommendations, paracetamol should not be suppressed in pregnant women or children; it should be used only when necessary. The study also analyzed postnatal exposure to paracetamol and found no association between paracetamol use during childhood and ASC symptoms.

[*Euro. J. Epidemiol.*; <https://doi.org/10.1007/s10654-021-00754-4>]

**Study finds cancer cells eat themselves for survival**

New research from a University of Copenhagen researchers team shows an entirely new way in which cancer cells can repair the damage that can otherwise kill them. The technique, called micropinocytosis (already a known tool for cells in other contexts) consists, in the cancer cells, pulling the intact cell membrane in over the damaged area and sealing the hole in a matter of minutes. The damaged part of the cell membrane is then separated into small spheres and transported to the lysosomes, where they are broken down. As part of the experiment, the researchers damaged the membrane of the cancer cells

using a laser that shoots small holes in the membrane and triggers micropinocytosis. They hypothesized that if the process is inhibited with substances blocking the formation of the small membrane spheres, the cancer cell can no longer repair the damage and dies, pointing towards micropinocytosis as a target for future treatment.

[*Source: <https://www.sciencedaily.com/>*]

**Gene-editing experiment conducted in space paves way for crucial research**

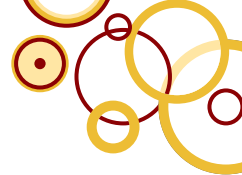
In a first, scientists carried out a gene-editing experiment aboard the International Space Station (ISS), which paves the way for extensive research into DNA repair in space. The team developed and successfully demonstrated a novel method for studying how cells repair damaged DNA in space. Astronauts travelling outside of Earth's protective atmosphere face an increased risk of DNA damage due to the radiation that permeates space. Understanding which DNA-repair strategies are employed by the body in space may be particularly important for protecting the health of space travellers. Researchers have now used CRISPR/Cas9 genome editing technology (the first time in space) to create precise damage to DNA strands so that DNA-repair mechanisms can then be observed in better detail. They successfully demonstrated the viability of the novel method in yeast cells aboard the ISS.

[*Source: <https://theprint.in/scientifix/>*]

**Researchers grow mini human lungs in lab to help develop new treatments for COVID-19**

Researchers from UC San Diego School of Medicine have grown mini human lungs in lab dishes using adult stem cells, featuring all types of cells that make up the human organ, allowing for testing of new treatments for respiratory diseases, including Covid-19. This human disease model will now allow health researchers to test drug efficacy and toxicity and reject ineffective compounds early in the process before human clinical trials begin. The stem cell scientists reproducibly developed three lung organoid lines from adult stem cells derived from human lungs. With a special cocktail of growth factors, they were able to maintain cells that make up both the upper and lower airways of human lungs, including specialized alveolar cells. By infecting the lung organoids with SARS-CoV-2, the team discovered that the upper airway cells are critical for the virus to establish infection, while the lower airway cells are important for the immune response. Both cell types contribute to the overzealous immune response, sometimes called a cytokine storm that has been observed in severe cases of Covid-19.

[*Source: <https://www.latestly.com/lifestyle/health-wellness/>*]



## TIDBITS

### SNACKING ON SNIPPETS

#### A 20-inch-tall cow: the smallest on Earth?

Rani, a fully grown 23-month-old Bhutanese cow, at a cattle farm in Charigram in Bangladesh, is claiming it to be the smallest cow in the world. The half-size heifer, which has recently become a social media sensation, is in the process of being verified by Guinness World Records as the world's shortest cow. Rani stands a mere 20 inches tall (and weighs 26 kg), meaning that, once her measurements are verified, she will easily break the record set by Manikyam, a 24-inch-tall Vechur cow in India who is the current Guinness World Record holder. Bhutanese cows, like Vechur cows, are typically referred to as dwarf cows.

[Source: <https://www.livescience.com/>]

#### Bariatric surgery in dogs: a first such case in India

A Pune-based animal clinic conducted its first laparoscopic sleeve gastronomy surgery on an overweight dog in what is probably a first of its kind case in India. The 8-year old obese female dog, Deepika, was weighing 50 kg. Post-surgery, doctors have claimed that the dog lost over 5 kgs in just a week. After discarding 5 kgs of excess fat in just a week post-surgery, the now-trim Deepika is able to walk and move around, which she had stopped since the past more than a couple of years, and is set to weigh around 18-20 kgs after a few weeks.

#### OIE calls for priority vaccination of Vets

The World Organization for Animal Health (OIE) and the World Veterinary Association (WVA) unite in encouraging countries to prioritise COVID-19 vaccination access for veterinary professionals. Veterinarians serve the health community by working at the animal-human interface. They need priority access to vaccination services to pursue their work which is central to safeguarding public health. This would help the countries to make their health emergency workforce safe, maintain the food production chain and ensure national risk-management strategies.

[Source: <https://www.oie.int/en/>]

#### A repurposed TB vaccine shows early promise against diseases like diabetes and MS

Around the world, volunteers are getting a vaccine developed to prevent tuberculosis in studies that have nothing to do with TB. The BCG shot is being tested as a treatment for type-1 diabetes, Alzheimer's disease, and multiple sclerosis. The vaccine appears to boost immunity in some situations, but paradoxically, BCG may also calm an overactive immune system. It's this soothing effect that made researchers take a look at BCG for autoimmune and inflammatory diseases, including eczema, asthma, allergies and multiple sclerosis. In multiple sclerosis, a condition in which the immune system attacks nerve cells in the brain and spinal cord, BCG appears to slow damage to the brain.

[Source: <https://www.sciencenews.org/>]

## REFLECTIONS

### THE ISSUE THAT WAS

- ✿ You did a great efforts for bringing out this very attractive and impressive publication. The contents are quite informative and educational for all of us. I am confident that with your visionary approach, this NAVS publication will further be improved and became more popular. My personal appreciations and congratulations ... [Prof AC Varshney, Chandigarh; varshneyac@gmail.com]
- ✿ Two issues now under your stewardship. Nice format .. informative ... On time. Well done. Congratulations ... [Dr Jit Singh, Udaipur; jitp48@gmail.com]
- ✿ Creativity and new ideas are reflected in this issue of NAVS News Vibes. You are putting lot of efforts to bring it in nice shape. Congratulations. Keep it up ... [Dr Naveen Kumar, Izatnagar; naveen.ivri1961@gmail.com]
- ✿ Hearty congratulations for another excellent issue of NAVS News Vibes. The layout is very nice and the contents are very appropriate. Please keep it up. One suggestion, you may please request colleagues to send any news item/new content a few weeks before an issue is published ... [Dr Raghavendra Bhatta, Bengaluru; directornianp@gmail.com]
- ✿ Greetings from KVASU. I have gone through the contents of issue 2 of NAVS News Vibes and am happy to Congratulate you and your team under the leadership of the new President for this beautiful issue with notable contents. The Newsletter covered all recent activities, developments and future programmes in our field. Keep it up ... [Dr MR Saseendranath; saseendranath@gmail.com]
- ✿ Many thanks to send me NAVS News Vibes that is excellently published. My hearty congratulations ... [Dr Mahendra Pal, Anand; palmahendra2@gmail.com]
- ✿ It is rejoicing to read the issue as it covers varied articles and news items with latest issues for which even if someone makes a lot of extra efforts, he/she even then may not get everything that you have incorporated. I liked very much reading (i) The gut-brain axis is more important than we thought; (ii) Recycling CO<sub>2</sub> into protein-rich animal feed; (iii) Can methane burps be bred out of cows?; and (iv) "The appendix may play a role in Parkinson's disease". Congratulations Editorial Team and Dr Pattanalik. I am very happy with the layout design as well. Wishing NAVS (I), its Office-bearers, and Members "All the Best" ... [Dr RK Singh, Izatnagar; rks\_virology@rediffmail.com]
- ✿ Please accept my felicitations for very well engineered NAVS Vibes. Your continued efforts will take our newsletter to greater heights. Incorporation of a lot of latest updates will enrich the readers. Well done. Keep it up. Best wishes ... [Dr PK Gupta, Bareilly; drpkg1943@gmail.com]
- ✿ Thank you very much for the April 2021 issue of the NAVS Newsletter. Good job ... [Dr JL Vegad, Jabalpur; jawaharlalvegad@gmail.com]

## BROOKE HOSPITAL FOR ANIMALS (INDIA)

*An Organisation Committed to Equine Health & Welfare and the Development of the Marginalised Equine Owning Community*

Brooke Hospital for Animals (India) or Brooke India (BI) is an affiliate of the Brooke, which is a United Kingdom-based international equine charity, focusing on the welfare and care of equines (horses, donkeys and mules). Brooke's vision is of a world in which working horses, donkeys and mules are free from suffering and have a life worth living.



*Renu Devi, equine owner from Sonipat, with her mule*

BI's journey in India towards equine welfare started two decades back when it was registered as a Section 8, Not for Profit Company under the Companies Act. Equids in India mostly work in harsh environments like Brick Kilns and face never-ending health troubles. This situation was mainly due to a lack of financial resources and knowledge on good management practices amongst the equine owners and insufficient understanding of equine health care by Local Health Providers (LHP).

BI's initial step as an intervention involved providing free veterinary services at different congregation points and organising Intensive Equine Care Camps (IECC) to spread awareness on welfare oriented husbandry practices and preventable injuries & diseases. From 2006 onwards, BI started focusing on establishing permanent intervention units and started expanding its operations to other states such as Andhra Pradesh, Rajasthan, Hyderabad and other parts of Uttar Pradesh. The BI team also introduced Community Engagement for exploring sustainable solutions for equine welfare and community development. This period saw the formation of male and female Self Help Groups called Equine Welfare Groups, the use of Participatory Rural Appraisal tools and increasing community participation. BI team saw the congregation of equines, equine owners, traders and local service providers at Equine Fairs as an excellent opportunity for a large-scale intervention. BI teams intervened to spread awareness on equine welfare issues, provide quality training on equine care and ensure equine welfare-friendly facilities and resources at these fairs.



*IECC Camps Luniyavas donkey fair*

BI teams also focused on strengthening the local service delivery system for working equines, including quality farriery services for hoof care, accurate and appropriate veterinary first aid during health emergencies, hair clipping, and welfare-friendly saddlery material. They also ensured compassionate handling while

delivering any of the services. These interventions were incorporated in Brooke's Theory of Change, in 2016. This theory promotes strengthened animal health policy environment and thriving equine owning communities.



*Equines working at Brick Kilns*

Currently, BI operates directly through 32 Equine Welfare Projects (EWPs) across 10 States and Union Territories in India, thereby reaching out to approximately 3.16 lakhs working equids and the equine owning community that owns/rears them. BI has multi-disciplinary teams with core strengths in Animal Health & Welfare, and Community Development, including Human behaviour Change, Gender Empowerment, Livelihoods and Resilience. Some of the notable achievements made by the team over the years include:

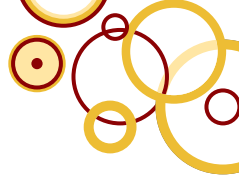
- Advocating the revision of Glander's Compensation- From INR 50 to 25,000 for horses and INR 16000 for mules/donkeys
- Inclusion of Equids in Livestock under the National Livestock Mission Schemes and thereby making them eligible for equine insurance.
- Advocating the issue of Animal Welfare Board of India (AWBI) advisories for Equine Fairs, Shrines & Pilgrim sites
- Introducing BI's innovative projects for ensuring sustainable availability of green fodder, through Azolla cultivation and Hydroponics techniques successfully across its intervention areas.
- BI teams worked throughout the COVID 19 pandemic. They supported the community by providing emergency treatments, alternative livelihood options, first aid kits and feed & fodder for the equines.

In the upcoming years, BI will focus on strengthening the Community Based Organisations, linkages with government welfare schemes, have robust disaster response capacity, advocate policy revisions on equine welfare issues, and enhancing the knowledge and skills of veterinary students on animal welfare, compassionate handling and upskilling the local farriers and animal health providers.



*Quality Farriery Services*

BI's team is proud of its journey and aspire to keep bringing a positive change for vulnerable and marginalised working equines and the rural communities, whose lives we have not touched yet.



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Hydroponics Fodder



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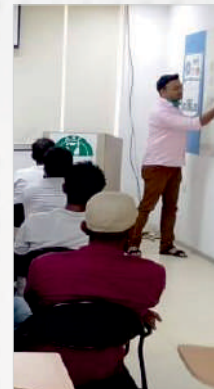
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Animal Health



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Awareness Program



Awareness Program



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8-10 ml/kg body weight/day, up to maximum 20 ml/kg

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Administer by intravenous infusion only.

The initial 10 to 20 ml should be infused slowly, keeping the animal under close observation due to possible anaphylactoid reactions

**PRESENTATION**

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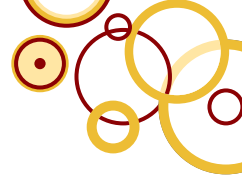
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A nutritional supplement to prevent subclinical and transient Hypocalcemia

### Feeding Recommendations:

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- Third bottle: 18-24 hours after calving
- one bottle a day for next 3-5 days.



## METAION

Unique blend of anions, lowers the anion-cation balance promoting an acidogenic effect, counters Hypocalcemia and related health disorders.

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For the management of Hypocalcaemia



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