



NRCE NEWS



NATIONAL RESEARCH CENTRE ON EQUINES

Dr. Mangala Rai takes over as Secretary DARE & DG, ICAR

Dr. Mangala Rai, an eminent expert in agriculture has taken over as Secretary, Department of Agricultural Research & Education and Director General, Indian Council of Agricultural Research on January 9, 2003. Born on June 30, 1947, Dr. Rai has a distinguished professional record as plant breeder, research guide, research manager and planner. He has held several prestigious positions including Project-Coordinator of AICRP on Linseed, ADG (Seeds), ADG (Policy and Perspective Planning), Director (Oilseeds Technology), National Director (NATP) and DDG (Crop Sciences). His pioneering contributions in the field of hybrid research in crops like rice, rapeseed, mustard, sorghum, cotton, maize, pearl millet, castor, sunflower have been highly applauded. Dr. Rai has visited more than 20 countries. He has also served various international



organizations including FAO, International Development Research Centre (Canada) and as Chairman, SAARC Agriculture Information Centre.

Dr. Rai has introduced a large number of novel concepts for the development of agricultural research and development in the country. We hope that under his dynamic leadership and able guidance, Indian agriculture will achieve new heights. Director and staff of NRCE congratulate Dr. Mangala Rai on his new assignment and wish him all success in future.

A Horse Lover Nominated to Rajya Sabha

Padam Bhushan, Dr. Narayan Singh Manaklao, a horse lover from Jodhpur, Rajasthan has been nominated as Rajya Sabha member. Dr. Manaklao is an educationist-cum-social worker, proactively engaged in several community welfare programmes such as aged care and environmental protection for the betterment of rural population. His institutionalised efforts for preventing drug abuse has been well appreciated. Dr. Manaklao is also working for the welfare of animals and is



involved in establishing gaushalas and conservation of indigenous animals including horses. In recognition of his contributions, the Government of India bestowed him with a Padam Shri in 1986 and Padam Bhushan in 1991.

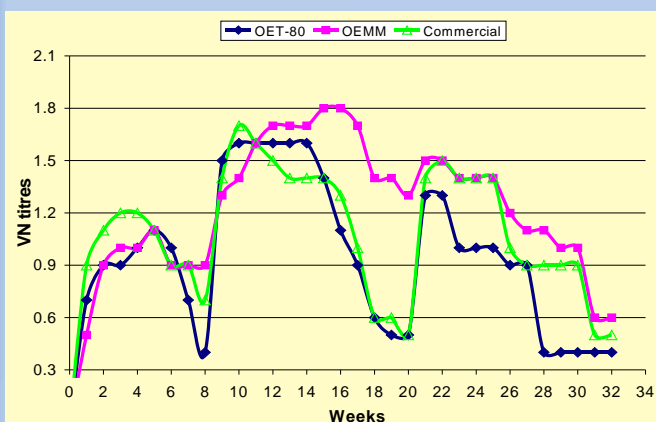
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- Herbal extracts for equine trypanosomosis being investigated
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RESEARCH HIGHLIGHTS

Indigenous EHV-1 Strain Evaluated as Vaccine Candidate

EHV-1 associated abortions are a big problem in equines and imported commercial vaccines are being used with no data on their efficacy in Indian scenario. In an effort to develop an indigenous killed vaccine, we evaluated inactivated local EHV-1 strain (Hisar-90-7) emulsified with Tween-80 (EHV/T) and mannide mono-oleate (EHV/M). On primary immunization of horses, antibody responses were similar with the two immunogens and were comparable with the commercial vaccines. Horses were further evaluated for the effect of two-boosters at 8 and 12-week after primary immunization. Following two boosters, complement fixing immune response with EHV/M was observed till 8 weeks while for EHV/T and commercial vaccine it was for 7 weeks only. Similarly, virus neutralizing response to EHV/M and commercial vaccine response was observed till 10 weeks after two boosters, whereas for EHV/T it lasted for 7 weeks only.



Virus neutralizing antibody response following booster immunization of horses with different EHV-1 immunogens

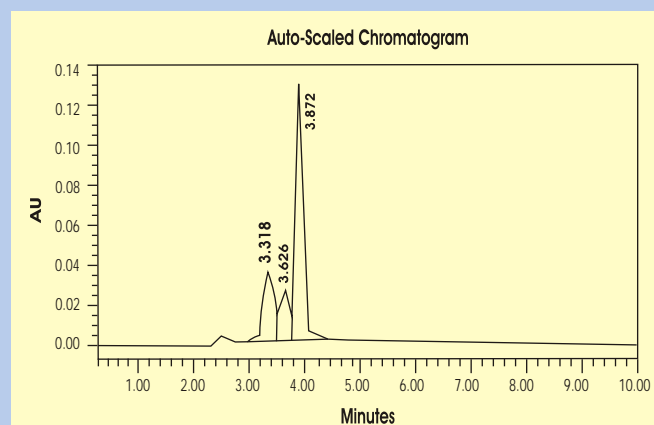
These findings indicate that EHV/M elicited significantly better immune responses than EHV/T and commercial vaccines on booster immunization

in horses and is a promising vaccine candidate. Further evaluation of the protective immune response of EHV/M in experimental animals and horses is under progress.

(B.K. Singh)

Herbal Extracts for Equine Trypanosomiasis being Investigated

Trypanosoma evansi is a protozoan parasite causing severe mortality and morbidity among equids in India. Due to emergence of resistance to existing drugs, control of this parasitic disease has



Fractions of *L. inermis* exhibiting antitrypanosomal activity, as obtained by HPLC

become a matter of great concern. Scientists at NRCE found antitrypanosomal activity in the extracts from leaves of a herb, *Lawsonia inermis* under *in vitro* system. The crude extract of this plant was further fractionated using different chromatography techniques (HPLC and TLC) to identify and purify the active ingredients from this herb. Major components exhibiting antitrypanosomal activity have been identified using a solvent system containing chloroform and methanol. *In vivo* testing of the fractions exhibiting maximal antitrypanosomal activity is in progress.

(S. Dey, S.K. Dwivedi & A.S. Panisup)

ELISA for Pregnancy Diagnosis in Equines

For pregnancy diagnosis in equines, a serum-based sandwich ELISA that is based on the detection of equine chorionic gonadotropin (eCG) has been standardized. The results of ELISA are at par with the rectal examination and ultrasonographic results. Inter- and intra-assay variability have also been worked out and coefficient of variations were observed to vary from 7.65 to 12.74 % and 1.60 to 7.11%, respectively. Using this assay, pregnancy can be diagnosed without physical examination of the pregnant mare by a veterinarian, just by sending serum sample of the animal to the laboratory.

(A.K. Gupta, Y.P. Sharma & S.K. Dwivedi)

Genotypic Characterization of Indigenous Breeds of Horses

The population of indigenous true breeds of equines is decreasing at an alarming rate due to cross breeding and there is a need to conserve the purebred animals. In an effort to conserve indigenous breeds of horses, the centre has initiated work on their genetic characterization. DNA polymorphism of Marwari horses was studied at 9 different microsatellite loci namely UM002, UM004, UM005, UM021, TKY19, HTG2, HTG6, VHL20 &



UCDEQ502. The number of alleles ranged from 2-6 with an average of 4.73 (± 0.73). The mean observed and expected heterozygosity values were 0.53 (± 0.06) and 0.61 (± 0.12), respectively. Similar work on

Kathiawari and Spiti horses has also been done as a part of doctoral research using microsatellite loci namely UM002, UM004, UM005, UM010, UM021, VHL20, VHL123, HTG2, HTG5, HTG6, HTG8, HTG20, TKY16, TKY19, UCDEQ502 & AHT17. The preliminary studies indicate the existence of sufficient genetic variability among these breeds. Further studies to ascertain the genetic diversity within and between these indigenous breeds is under progress.

(A.K. Gupta & Mamta)

A Quick Diagnostic for *Salmonella* Abortusequi

In an attempt to develop a quick and improved diagnostic, various antigens of *Salmonella* Abortusequi, including outer membrane protein (OMP), whole cell lysate, heat extract, Polymyxin B extract and partially purified cytotoxic factor were evaluated. These antigens were coated on latex beads (0.45μ) and the efficacy of each reagent was tested. Based on the results, OMP-based latex agglutination (LA) test was developed. In a preliminary study, 100 randomly selected field samples were tested by both LA and tube agglutination test. There was 100% agreement between the results of both the tests. Further testing on more number of field samples is under progress.

(Praveen Malik & S. K. Khurana)

Use of Equine Manure for Mushroom Cultivation

An attempt was made to evaluate the suitability of equine farm waste in mushroom cultivation. For this purpose, the compost was prepared using equine dung, wheat straw, gypsum and equine urine in a compost pit at the required temperature and moisture. The compost so prepared was successfully used for white button mushroom cultivation. This technology is being further assessed for generation of additional income for the equine farmer.

(S. Dey)

INSTITUTIONAL ACTIVITIES

Staff Research Council Meeting

The Annual SRC meeting was held under the Chairmanship of Dr. S. K. Dwivedi on 5-6th May 2003 to discuss the progress of various research projects. The house reviewed the research projects currently undergoing in the institute in the area of



Annual SRC meeting in progress under the Chairmanship of Dr. S.K. Dwivedi, Director, NRCE

equine health and production. The progress made in seven different ongoing research projects was reviewed and targets for the next year in the ongoing projects were approved. Five new project proposals were also approved by SRC.

Research Advisory Committee Meeting

The 5th RAC meeting was held on 20th May 2003 under the Chairmanship of Dr. V. Gnanaprakasam. Various technical, administrative and policy matters related to research work were discussed including five new research projects and recommendations were made to the Council. The RAC reiterated that the development of containment facilities at the Centre should be the priority during the current year. The Chairman emphasized the need for evolving cost benefit ratio in terms of research output and advised scientists for submitting research project proposals to other funding agencies.



5th RAC meeting being held to discuss research activities of NRCE

New projects initiated at NRCE

- ❑ Studies on relative prevalence of various pathogens in foal diarrhoea and development of diagnostics.
- ❑ Development of diagnostic(s) for pathogenic *Streptococcus equi* in equines.
- ❑ Molecular marker based pilot study for detection of angiotensin-1-converting enzyme gene (ACE) in indigenous equines.
- ❑ Studies on the prevalence of infertility in female equids.
- ❑ Development of diagnostics for equine protozoal disease-trypanosomosis (surra).

Xth Five Year Plan for NRCE approved

Indian Council of Agricultural Research, New Delhi has granted its approval to National Research Centre on Equines for the 10th Five Year Plan. An outlay of Rs. 13.50 crores has been approved for the plan period 2002-2007. Under the 10th Plan, provision for construction of office-cum-laboratory building at Bikaner sub-campus and extension of laboratory-cum-office building at Hisar has been made. There is also provision for construction of a microbial containment (BSL-III) laboratory at Hisar for working on hazardous equine infectious agents.

EXTENSION ACTIVITIES

Ashva Pardarshini and Kisan Goshthi at Bikaner

A state level exhibition 'Ashwa Pradarshini' was organized at Equine Production Centre, Bikaner on 17th February 2003 in which 46 horses from various parts of the state participated. On this occasion, a farmer's meeting 'Kisan Goshthi' was also held in which about 40 farmers exchanged their views and experiences with the scientists. The



Dr. S.N. Tandon addressing to the farmers during a Kisan Goshthi at Bikaner

faculty and students from college of veterinary sciences, Bikaner participated in the event and the N.C.C. wing from veterinary college performed horse show including jumps and tag pegging.

Vaccination-cum-Health camp at Rajli

A Vaccination-cum-Health Camp was organized at Rajli (Haryana) on 7th February 2003 for vaccination against tetanus to all the equines of the village. The same was done following a reported clinical case of tetanus in the village. In this camp, 98 animals were provided tetanus toxoid and farmers were informed about health-care and control measures for this disease.

Health Camp at Katra (J&K)

A clinical camp was organized at Katra, Jammu from 10th to 12th June 2003 for health care of

about 8000 equids. Major ailments that were observed in animals of this region and given treatment included lameness, colic, retention of



Farmers getting treatment from NRCE scientists for their sick animals in a Health Camp at Katra (J&K)

urine, etc. In addition animals were provided with deworming, mineral mixture and vitamin supplements for their better health.

A total of 422 sera samples collected from animals in this camp were tested for major equine diseases. All sera were found negative for *Salmonella* Abortusequi, equine infectious anemia, glanders, equine influenza A/equi-2, brucellosis antibodies. EHV-1 infection was prevalent in 52 (12.3%) and *Babesia equi* in 108 (25.6%) of the equine sera tested

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VISIT OF DIGNITARIES

Major General B.S. Panwar visited NRCE

Major General B.S. Panwar, Additional Director General, Remount Veterinary Services, Army HQ, New Delhi visited this Centre on 28th April 2003. During his visit Maj. Gen. Panwar took keen interest in the ongoing research activities of the Centre and appreciated the outstanding research work being done in the area of diagnosis,



Dr. S.K. Dwivedi, Director, NRCE, apprising Maj. Gen. B.S. Panwar about ELISA for pregnancy diagnosis in mares being developed at the Centre

epidemiology and control of equine diseases. On this occasion, Dr. S.K. Dwivedi highlighted the salient achievements of the Centre in the area of equine health and production and also discussed about the future research priorities of the Centre. Addressing to the scientists, Maj. Gen. Panwar said that Remount Veterinary Corps and this centre can collaborate to exchange each other's experiences for the welfare of equine population and offered all kind of help to this Centre in this direction.

PERSONALIA

Education and training

Dr. Nitin Virmani (Scientist) completed his Ph.D. thesis work entitled "*Pathobiology of Indigenous Equine Herpes Virus-1 Infection in Pregnant BALB/c Mice*" at NRCE under MOU signed with CCS Haryana Agricultural University, Hisar. Under this programme, two more students are presently working at NRCE for their Ph.D degree.

Participation in Symposia/Seminars

✦ Dr. S. Dey, Sr. Scientist, presented a paper entitled "Evaluation of *L. inermis* Leaf Extract for its Antitrypanosomal Activity" in Symposium Focusing on Need to Develop New Diagnostic, Therapeutic and Preventive Approaches to deal with Diseases of Farm and Companion Animals, held on February 7-9, 2003 at Anand (Gujarat).

✦ Dr. S.K. Khurana, Sr. Scientist, attended "International Conference on Alternative to the Use of Animals in Research and Education" organized jointly by the Department of Biotechnology and Ministry of Environment at New Delhi from February 18-20, 2003.

✦ Dr. S.K. Khurana, Sr. Scientist, presented a paper entitled "Isolation of Acholeplasmas from Indigenous Equines" at Xth Annual Conference of Indian Association for the Advancement of Veterinary Research and National Symposium held on April 14-15, 2003 at the CVAS, CSKHPKV, Palampur (H.P.).

OTHER NEWS...

Cloned Horse and Mule Produced

Several animal species, including sheep, mice, cattle, goats, rabbits, cats, pigs and, more recently, mules and horses have been reproduced by somatic cell cloning, with the offspring being a genetic copy of the animal donor of the nuclear material used for transfer into an enucleated oocyte.

In a study published in Science (Aug. 22), scientists of University of Idaho have been successful to clone a member of horse family- a mule named Idaho Gems. The foal was born on May 04, 2003 and its DNA comes from fetal cell culture.

In another laboratory, the Italian Scientists, according to Nature (August 7), have produced first cloned horse named Prometea, born on May 28, 2003, by fusing the skin cells of her mother with eggs from which nucleus was removed.

NGOs Step in to help Conserve Indigenous Horses

Various non-governmental organizations (NGOs) have come forward to conserve the decreasing population of indigenous horses in the country. Marwar Horse Breeding & Research Institute (MHBRI), a Jodhpur based organization has initiated efforts for creating awareness among farmers and equine breeders about the need to conserve the vanishing breeds of Marwari horses. Department of Animal Husbandry & Dairying, Ministry of Agriculture (GOI) has sanctioned a sum of Rs. 42 lacs to MHBRI for augmenting the efforts of governmental organizations like NRCE towards conserving Marwari breed in the country. NRCE hopes that such NGOs will help in providing true-to-breed stallions for breeding purpose to the equine breeders of Rajasthan to facilitate conserving the germ plasm of the Marwari breed in India.

✦ Dr. Rajender Kumar, Scientist, attended one-day National Seminar on "Patents' Protection, Valuation, and Commercialization" on 28th April, 2003 at India International Centre, New Delhi.

✦ Dr. Yash Pal, Scientist, presented a paper entitled "Haematological and Biochemical Profiles in Healthy Indian Spiti Horses" in 13th Animal Physiology Conference and National Symposia on Constraints and Strategies for Augmenting Lactation in Dairy Animals" held at NDRI, Karnal on February 6-7, 2003.

Our New Colleagues

✦ Dr. R.C. Sharma joined as Senior Scientist (Animal Breeding) at Equine Production Campus, Bikaner on 22nd March 2003.

✦ Dr. Baldev R. Gulati joined as Senior Scientist (Veterinary Microbiology) on 31st March 2003.

✦ Smt. Indu Jyoti joined as T-3 (Hindi Translator) on 31st January 2003.

Joined on transfer

✦ Dr. Rajender Kumar joined as Scientist (Veterinary Parasitology) on February 17, 2003.

✦ Sh. Dilip Kar joined as Assistant Administrative Officer on May 5, 2003.

Transfers

✦ Sh. Rajinder Singh (AAO) transferred to Indian Institute of Pulses Research, Kanpur on February 11, 2003.

Promotions

✦ Dr. Yash Pal Sharma (Scientist) promoted to Senior Scientist with effect from June 3, 2002.

✦ Dr. R.A. Legha (Scientist) promoted to Scientist (Senior Scale) w.e.f. August 5, 2001.

Obituary

✦ Sh. Jagminder Singh, SSG-II expired on May 11, 2003.



FROM DIRECTOR'S DESK

I feel immense pleasure in forwarding the first issue of NRCE News 2003. As is reflected in this issue, this period has been quite productive for the Centre: we moved forward towards developing an effective EHV-1 vaccine; a kit for sero-diagnosis of pregnancy in mares is on anvil; a herbal drug being developed for treatment of trypanosomosis is showing promising results and work towards characterization of indigenous breeds of equines is in progress. During this period, three scientists joined this Centre and five new research projects were initiated in the areas of equine health and production. The 10th Five Year Plan for NRCE was approved with an outlay of Rs. 13.50 crores and a provision for development of state-of-the-art infrastructure including microbial containment (BSL-III) facility, extension of lab-cum-administrative building at Hisar and construction of lab-cum-office building at Bikaner.

I would like to record my sincere thanks to Indian Council of Agricultural Research, New Delhi, particularly Dr. Mangla Rai (DG, ICAR), Dr. V.K. Taneja (DDG, Animal Sciences) and Dr. Lal Krishna (ADG, Animal Sciences) for their continuous support that is motivating force for us to improve equine health and production.

(S.K. Dwivedi)

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