



# NRCE NEWS



NATIONAL RESEARCH CENTRE ON EQUINES

## PROMISING TECHNOLOGIES

### A laboratory test developed for pregnancy diagnosis in mares

A serum-based sandwich ELISA has been developed at this centre for pregnancy diagnosis in mares. This test is animal friendly as it does not involve the transport of pregnant animal to a diagnostic centre for pregnancy diagnosis and is based on the detection of a hormone (equine chorionic gonadotropin) specifically present in the serum of pregnant mares. Testing of serum samples collected from mares covered by horse stallion at different gestation intervals indicated that pregnancy can be detected by this test as early as 35 days of gestation. However, pregnancy in mares covered by donkey stallion could not be diagnosed by this test.

### Patent filed

Patent application no 36/Del/2001 entitled "Complement fixation test based COFEB-Kit for diagnosis of *Babesia equi* infection in equines" has been submitted after first examination report. A divisional application for patenting of product has also been submitted through ICAR to Patent Office, New Delhi.

### An improved kit for EHV-1 diagnosis

This centre has developed a neutralizing monoclonal antibodies-based blocking ELISA (B-ELISA) kit for



### B-ELISA kit developed at NRCE for EHV-1 diagnosis

serodiagnosis of EHV-1 infection. This B-ELISA is simple to perform and less time consuming than virus neutralization test for diagnosis of EHV-1 infection. Using this kit, any veterinary diagnostic laboratory can detect EHV-1 infection in suspected equines within 5-6 hours. The shelf life of this kit was evaluated and found to be 6 months when stored at 4°C.

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- \* Nation-wide monitoring of equine diseases

## Quinquennial Review Team (QRT) reviewed NRCE activities

The Quinquennial Review Team (QRT) under the chairmanship of Dr S.S. Rathore, Ex-Dean, College



QRT under the chairmanship of Dr. S.S. Rathore reviewing the research activities of NRCE, Hisar

of Veterinary Sciences, PAU, Ludhiana reviewed the research work done by the centre during 1996-2002. Meetings of QRT members were held both at Hisar (September 4, 2003) and Bikaner Campus (February



QRT members interacting with scientist at EPC Bikaner

24, 2004). The QRT members visited different laboratories of both the campuses and interacted with the scientists individually about the progress

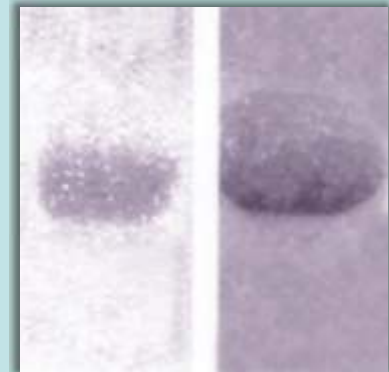
made during the period under review. QRT members appreciated the ongoing research activities and excellent team spirit among scientists of NRCE under the leadership of Dr. S.K. Dwivedi. QRT members met at Hisar on March 22, 2004 to finalize the report for the period under review.

## RESEARCH HIGHLIGHTS

### Monoclonal antibodies characterized for detection of animal rotaviruses

Rotavirus has been recognized as a predominant cause of acute diarrhoea in infants of several animal species including equines. Hybridomas secreting monoclonal antibodies (MAbs) developed against group A rotavirus

(GAR) were characterized for their reactivity with different proteins of equine and bovine rotavirus by immunoblotting. One of the hybridomas



MAb binding VP6 protein of equine and bovine rotaviruses on immunoblotting

reacted with a 44 kDa group-specific inner capsid protein (VP6) of both equine and bovine rotaviruses on immunoblotting.

A sandwich ELISA was standardized employing hyperimmune rabbit serum raised against foal rotavirus as coating antibody and VP6-specific MAb as detector antibody to test its reactivity with rotaviruses of bovine, equine and porcine origin. The monoclonal antibody reacted equally with all the

bovine and equine rotavirus isolates tested and also with two known rotavirus-positive samples of porcine origin. These findings suggest that this monoclonal antibody is directed against a group-specific protein VP6 and can be employed for detecting group A rotavirus infection directly from stool samples of different animal species.

**(Baldev R. Gulati & B.K. Singh)**

### Pathogenic potential of *Streptococcus equi* and *Streptococcus zooepidemicus* isolates

Two sub-species of *Streptococcus equi* that are commonly isolated from equines are: *Streptococcus equi* subspecies *equi*, the causative agent of strangles and *Streptococcus equi* subspecies *zooepidemicus*, that can cause abortions, endometritis, cervicitis, lower respiratory tract disease & foal pneumonia, abscesses, joint infections, etc. Twenty-nine equine streptococcal isolates (11 *S. equi* and 18 *S. zooepidemicus*) were characterized for their antibiotic sensitivity and mice pathogenicity. On testing with 18 antimicrobials, most of the isolates were sensitive to ciprofloxacin, lincomycin, amoxycillin, trimethoprim and penicillin while were resistant to kanamycin, nalidixic acid and sulphadiazine. Resistance of the isolates to many of the antimicrobials tested seems to be due to indiscriminate use of antibiotics in the field.

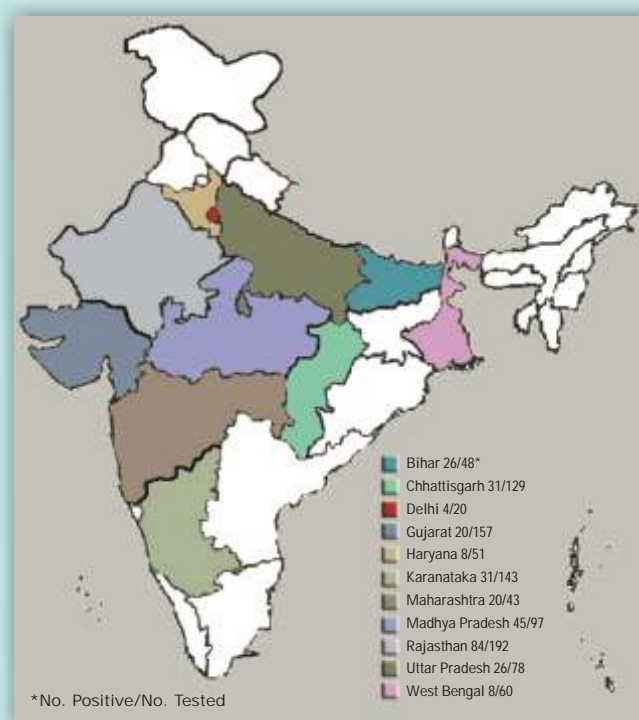
The mice pathogenicity indicated that all the *S. equi* isolates were highly pathogenic, killing mice in less

than 24 h, whereas some *S. zooepidemicus* isolates were less pathogenic, taking up to 48-72 h to kill the mice. The findings also indicate the potential of *S. zooepidemicus* isolates in causing disease among equines.

**(P. Malik, S.K. Khurana and N. Virmani)**

### Nation-wide monitoring of equine diseases

NRCE is involved in nation-wide disease monitoring and surveillance of major infectious diseases prevalent in indigenous equines in different geographical locations. The centre has been



Sero-surveillance of *Babesia equi* in different states of India during Jan-June, 2004

recognized as national referral centre for diagnosis of important equine infectious diseases by the Department of Animal Husbandry and Dairying,

Ministry of Agriculture (Government of India). During the period, 1018 serum samples of indigenous equines were collected from 11 states, viz, Haryana, Rajasthan, Delhi, UP, Bihar, MP, Chhattisgarh, West Bengal, Gujarat, Maharashtra, Karnataka. On testing for various diseases, 29.8% of equines were found positive for babesiosis, 2.3% for EHV-1 infection and only 0.4% were positive for equine influenza antibodies. Maximum prevalence of *Babesia equi* infection was in equines of Bihar (54.2%) followed by Maharashtra (46.5%). None of the samples tested was positive for African horse sickness, equine infectious anemia, glanders, equine viral arteritis, brucellosis and salmonellosis.

## INSTITUTIONAL ACTIVITIES

### Research Advisory Committee Meeting

The 6<sup>th</sup> RAC meeting was held under the chairmanship of Dr. V. Gnanaprakasam on April 20, 2004 to discuss various technical, administrative and policy matters of NRCE. The RAC reiterated that the development of containment facilities and getting



RAC meeting being held under the chairmanship of Dr. V. Gnanaprakasam to discuss research activities of NRCE

recognition as international reference laboratory should be the priority of the centre. The RAC strongly recommended that vacant posts of the scientists should be filled up on priority basis and additional technical, administrative and supporting staff should be provided to the centre. Achievements of the scientists of the centre in 11 different on-going research projects were reviewed and future research guidelines were discussed. The RAC strongly recommended that scientists of the centre should be encouraged to go for advanced trainings at national and international institutes for their skill upgradation.

### Staff Research Council Meeting

The Annual SRC meeting was held under the chairmanship of Dr. S.K. Dwivedi, Director on May



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

1 and 6, 2004 to discuss the progress made in various on-going research projects. Five new research project proposals submitted by various scientists were approved by the SRC.

### New research projects initiated

- Development of diagnostics for *Rhodococcus equi* infection in foals.
- Studies on improvement of diagnostics for differentiation between EHV-1 and EHV-4 infections employing molecular techniques.
- Development of sensitive and specific diagnostic tests for detection of equine piroplasmosis.
- RFLP-based genotyping of major histocompatibility complex class II genes in Marwari horses.
- Isolation of stallion seminal plasma proteins and their effect on *in vitro* fertilizing ability of spermatozoa.

### Institute Management Committee Meeting

Twenty-fourth meeting of Institute Management Committee was held on March 23, 2004 under the chairmanship of Dr. S.K. Dwivedi, Director NRCE. Various decisions taken in the meeting included fixation of training fee for institutes/state universities desirous of sending their post-graduate students for various trainings (Rs. 5000/- for two-months training and Rs. 7500/- for four-months training per student) and writing off various losses at the centre.

## EXTENSION AND MISCELLANEOUS ACTIVITIES

### Equine Health Camp at Village Barukhera, Sirsa (Haryana)

NRCE organized a clinical health camp at Barukhera village of Sirsa district of Haryana on May 12, 2004.



NRCE scientists doing pregnancy diagnosis in mares by ultrasonography in a health camp at Barukhera (Sirsa)

More than 112 equine owners along with their equines participated in the camp. Services of pregnancy diagnosis, ultrasonography, deworming, tetanus immunization were provided to all needy equines. Treatment for various ailments was also given to sick equines. Various samples from sick animals were collected for laboratory diagnosis of diseases in this region. A kisan goshti was also organized on this occasion to acquaint the equine owners with the problems of equines of this region and their management.

### Equine Health Camp at Nagaur (Rajasthan)

A health camp was organized during an animal fair on January 30, 2004 at Nagaur (Rajasthan) by

Equine Production Campus, Bikaner. Fifty-seven horses were treated for various ailments, viz, worm infestation, lameness, debility, gastrointestinal and



Dr. R.S. Bansal treating sick animals in a health camp at Nagaur (Rajasthan)

reproductive problems. In addition, equine owners were educated about health and production management of equines and literature developed by NRCE was distributed to the horse owners.

## Republic day celebrated

The celebrations of 54<sup>th</sup> republic day at the centre



Dr. Dwivedi addressing employees after flag hoisting ceremony on the occasion of Republic Day

began on 26<sup>th</sup> January 2004 with the hoisting of the

National Flag by Dr. S.K. Dwivedi, Director. Addressing employees of the centre on this occasion, Dr. Dwivedi elaborated the salient achievements of the centre towards improvement in equine health and production. He complimented the efforts of scientists and employees of the centre towards betterment of farmers and equine breeders. He emphasized on the need to follow the footsteps of those who sacrificed their lives for the nation and advised to dedicate whole-heartedly for the development of this country. On this occasion, employees and their family members presented a cultural programme.

## VISIT OF DIGNITARIES

### Dr. A.S. Faroda visited the centre

Dr. A.S. Faroda, Chairman, Agricultural Scientists Recruitment Board, ICAR visited NRCE on April 23, 2004. During his visit, Dr. S.K. Dwivedi, Director apprised him of various research and development activities at the centre for improvement



Dr. A.S. Faroda, Chairman, ASRB being apprised of the research activities at NRCE

in the health and production potentials of equine. Dr. Faroda was impressed by the technical and expertise available at the centre for the benefit of equine farmers.

## PERSONALIA

### Participation in Conference/Symposia

- ❑ Dr. S. Dey participated in National Symposium on “Latest Approaches and Biotechnological Tools for Health Management of Farm and Companion Animals” organized by Indian Society for Veterinary Medicine at Indian Veterinary Research Institute, Izatnagar, Bareilly, U. P. from Feb. 11-13, 2004.
- ❑ Dr. B.R. Gulati participated and presented a paper in XI Annual Conference of Indian Association for the Advancement of Veterinary Research (IAAVR) organized by Indian Veterinary Research Institute, Izatnagar, Bareilly, U. P. from Feb. 27-28, 2004.
- ❑ Dr. Mamta participated in National Symposium on “Livestock Biodiversity *vis-a-vis* resources exploitation: an introspection” organized by Society for Conservation of Domestic Animal Biodiversity at National Bureau of Animal Genetic Resources at Karnal, Haryana from Feb. 11-12, 2004.
- ❑ Dr. Y. Pal attended National Symposium on “Livestock Biodiversity *vis-a-vis* resources exploitation: an introspection” organized by Society for Conservation of Domestic Animal Biodiversity at National Bureau of Animal Genetic Resources at Karnal, Haryana from Feb. 11-12, 2004.

### Return from abroad

- ❑ Dr. Sanjay Kumar, Scientist (Veterinary Medicine) joined back duty in the Centre on

March 15, 2004 after availing JSPS post-doctoral fellowship at Japan for two years.

### Joined after availing study leave

- ❑ Dr. Pramod Singh (Scientist) joined back at EPC Bikaner on February 2, 2004 after availing study leave for PhD.

### Participation in trainings

- ❑ Dr. A. Arangasamy (Scientist) attended Foundation Course for Agricultural Research Service at NAARM, Rajendra Nagar, Hyderabad from October 28-February 24, 2004.
- ❑ Sh. Dilip Kar (AAO) participated in a workshop on ‘Accounting Reforms’ organized by National Institute of Financial Management from March 4-5, 2004.

### Promotions

- ❑ Dr. Jitender Singh (T-3) promoted to T-4 w.e.f. October 4, 2002.
- ❑ Sh. P.P. Chaudhary (T-3) to T-4 (Laboratory Technician) w.e.f. December 10, 2002.
- ❑ Sh. Om Parkash (T-1) promoted to T-2 (Tractor Driver) w.e.f. October 23, 2002.

### Upgradations

- ❑ Sh. Partap Singh (LDC) upgraded to the grade of Rs. 4000-100-6000 w.e.f. February 29, 2004.
- ❑ Sh. Satbir Singh (SSG-I) promoted to the scale of Rs. 2610-3540 w.e.f. June 14, 2003.
- ❑ Sh. Hanuman Singh (SSG-I) promoted to the scale of Rs. 2610-3540 w.e.f. October 11, 2003.

### Obituary

- ❑ Sh. Dalsher (SSG-I) expired on June 20, 2004.



## FROM DIRECTOR'S DESK

It is a matter of pleasure to forward the first issue of NRCE News 2004. During this period, a patent application entitled *Complement fixation test based COFEB-Kit for diagnosis of Babesia equi infection in equines* was submitted to the patent office, Government of India. A vaccine developed for control of equine herpes virus-associated abortions in mares is in the final phase of experimental trials and a laboratory test developed for pregnancy diagnosis in mares is under field trials.

Quinquennial Review Team reviewed the progress of the centre for the period 1996-2002 and members of the QRT applauded the achievements of NRCE during the period under review. Based on the feedback from the field and recommendations of various expert committees, the on-going research programmes were re-oriented to achieve maximum benefits for the equine owners and five new need-based research projects were initiated.

I would like to record my sincere thanks to Indian Council of Agricultural Research, New Delhi, particularly Dr. Mangala Rai (Secretary DARE and DG, ICAR), Dr. V.K. Taneja (DDG, Animal Sciences) and Dr. Lal Krishna (ADG, Animal Health) for their continuous support to this centre to improve equine health and production. The publication committee deserves appreciation for their efforts in printing of this newsletter.

(S.K. Dwivedi)

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