

Proceedings of 3rd Annual Review Meet of DBT - Network Project on Brucellosis 19th -20th November 2015 at DFRL, Mysuru

Third Annual Review Meet of DBT - Network Project on Brucellosis was jointly organized by Defence Food Research Laboratory (DFRL), Mysuru and ICAR-National Institute of Veterinary Epidemiology and Disease Informatics (NIVEDI), Bengaluru at Mysuru on 19th - 20th November 2015. Project Investigators, scientists and research fellows from 15 centres participated in the meet.

The inaugural function was attended by Dr. S. R. Rao, Advisor, DBT, New Delhi, Dr. H. Rahman, Project Coordinator and Director, ICAR-NIVEDI, National experts Dr. Harsh Vardhan Batra, Director and Scientist 'G', DFRL, Mysuru, Dr. Satish Gupta, Emeritus Scientist, Former Deputy Director, National Institute of Immunology, New Delhi, Dr. Shaikh Shah Hossain, Public Health Specialist, CDC, India and International expert, Dr. Ramesh Vemulapalli, Professor and Department Head, Department of Comparative Pathobiology, Purdue University, USA.

The program started with ICAR song and lighting of the Lamp, welcome address by Dr. Joseph Kingston, HOD, Dept of Microbiology, DFRL, Mysuru followed by introduction of all the participants.

Dr. H. Rahman addressed the gathering and welcomed the delegates and participants on behalf of PMU. He briefed progress made so far under the project. The first year slow progress was attributed to standardisation of protocols, recruitment of RA, SRF & JRF but from second year onwards the progress was very good. Further he thanked Dr. Batra, Dr. S. R. Rao & external experts for their guidance and taking this project towards success.

Dr. H.V. Batra appreciated the PMU-DBT unit and he commented that all the collaborating units are doing good research work. He also expressed the satisfaction over the contribution of knowledge in terms of Epidemiology, Diagnostic, Vaccine, Repository and Informatics on Brucellosis in the country.

Dr. Ramesh expressed his happiness towards achievements so far for all the units in the project.

Dr. S. Hossain addressed that public health concern of the disease and he opined that this kind of project is model for implementation of one health proposals in the country.

Dr. S. R. Rao said Brucellosis project is an important project because of its public health importance on both veterinary and human side. Lots of research activity is important to

eradicate the disease and he expressed happiness over the performance of the project as a whole. He has shared his views on the road map for the next 2 years of DBT Network project on brucellosis. They are

1. To develop molecular epidemiology map in India and a group should continuously monitor it and upgrade it regularly.
2. To develop new generation vaccine for animal and human use.
3. To develop and commercialize a range of diagnostics from point of care to confirmatory
4. To undertake the concept of 'BRUCELLA FREE VILLAGE'

He also stressed that producing own tools, policies and intervention strategies in the country is very important to make country free from the disease. He thrust the importance of the biosafety and biosecurity measure to be undertaken during handling of *Brucella* cultures in the projects. People working with *Brucella* should take at most biosafety measures to avoid any untoward incidents.

Dr. Satish Gupta expressed his views on carrying over this project for next 2 years. He stressed on summarising the highlights of the program for the past 3 years and achievement of the goals that are not achieved so far. He also emphasized the importance of the bio safety measures and the safety of the person handling the organisms. He opined that metagenomic studies of the Indian isolates are important for diagnostic and vaccine development and also stressed that the objectives for next 2 years should be crisp and achievable.

The Technical program started with Action taken Report presentation by **Dr. H. Rahman**, Project Coordinator, PMU followed by four sessions comprising of presentations by experts in each session. The research progress was thoroughly reviewed by the international and national experts.

Session I was chaired by **Dr. Batra** and **Dr. Hossain** gave presentation on epidemiology of brucellosis especially on sero epidemiology. Dr. Rajeswari Shome, PI-BE1 presented progress made by different epidemiology units for the 3rd year. Session II was chaired by **Dr. Ramesh Vemulapalli**, external expert and he presented the status of brucellosis vaccine followed by presentations from Brucellosis vaccine groups Dr. Rakesh Bhatnagar, PI-BV1 and Dr. Pallab Chauduri PI-BV2. Session III was chaired by Dr. Satish Gupta, the PIs of brucellosis diagnostic groups; Dr. Puranchand, PI-BD1, Dr. M. Nagalingam, PI-BD2 and Dr. Rathnagiri Polavarapu, PI-BD3 presented 3rd year progress.

Second day started with poster presentation and it was evaluated by the experts **Dr. S. Hossain** and **Dr. Joseph Kingston**. The first prize was awarded to *Brucella* Epidemiology-1

(BE1), two second prizes were awarded to *Brucella* Vaccine-2 (BV2) and *Brucella* Bioinformatics (BB) and four third prizes were awarded to *Brucella* Vaccine-1 (BV1), *Brucella* Diagnostics-1 (BD1), *Brucella* Diagnostics-3 (BD3) and DFRL, Mysuru. Poster session was followed by presentation by Dr. J. Rajendran on *Brucella* Bioinformatics project.

The Plenary session was chaired by **Dr. S. R. Rao** where the experts shared their views and gave suggestions. Dr. S. R. Rao appreciated all the RA, SRF and JRFs for the posters and their contribution to project. He told Epidemiology group have picked up and good progress made in collection of samples, isolates and statistical analysis. With respect to vaccines, he appreciated the progress and expressed the need for travelling a long route and also told, the most promising is the diagnostics group. Further he expressed his plan to propose International conference on Brucellosis in end of next year. He sought help and co operation from all the units for hosting the International brucellosis conference in Bengaluru.

Project Coordinator **Dr. H. Rahman** thanked Dr. Batra, Dr. Joseph and his team for organizing this meet and for their hospitality. Thanked all the experts for the road map for another 2 years so that all the little deficiencies will be taken care. He highlighted the appreciable growth in Brucella-Network Project. He told that mutant vaccine is in process of validation and expecting reports from TANUVAS and DRDO. He emphasized effectiveness of vaccine has to be evaluated separately under controlled lab conditions. Diagnostics groups were very promising and will be taken to 3rd party validation by TANUVAS and followed by commercialisation by proper channel through PMU.

Dr. Satish Gupta appreciated progress made so far under the network project. Appreciated diagnostic group for achievement in developing promising diagnostics in short span of time. Further he opined that the sero-prevalance data in animal and human will help in creation of epidemiological map at national level. He advised to develop a road map when the vaccine will come up, who will be the user and how it is going to serve the veterinary group. So a policy matter should also be initiated by vaccine group with help of Dr. Ramesh.

Dr. S. Hossain expressed happiness towards tremendous progress made by epidemiology group which adds to success of the network. Further he emphasised the great scope of improvement in presentation of findings and the conclusion. Current activity has given baseline appearance and the study highlights more *B. abortus* prevalence in the country and shows it is direct implication on human infection.

Dr. H.V. Batra appreciated Brucellosis Epidemiology as it is quite challenging. However stressed on the need of work on therapeutics. Therapeutic vaccine -patch based vaccine for small ruminants can be tried. Research on improving the immunity of the subjects is important. Newer area of research will always be tried and made promising with the efficiency of this DBT network team.

Dr. Ramesh presented the status and advances in brucellosis vaccines. He also expressed that the group should continue to work for longer duration to develop affordable diagnostics and vaccines suitable for Indian subcontinent.

Dr. Rahman, Project Coordinator thanked Dr. S. R. Rao for all the support rendered by DBT making a successful progress. He thanked Dr. Batra, Dr. Joseph Kingston, Dr. Shylaja, Dr. Balakrishnan and team for making this meeting a grand success.

After threadbare discussion the following important recommendations and suggestions were given:

UNIT WISE RECOMMENDATION:

A. *Brucella* Epidemiology, *Brucella* Repository and *Brucella* Bioinformatics (BB)

1. Dr. Chandel and Dr. Puran Chand with Dr. Rahman will compile and analyse animal brucellosis epidemiological data at PMU, ICAR-NIVEDI, Bengaluru.
2. Dr. Gill will carry out compilation and analysis of human brucellosis epidemiological data.
3. The putative isolates of *Brucella* isolated by the BE Units will be sent to the PI, *Brucella* Repository (BR) at Division of VPH, ICAR-IVRI, Izatnagar by the respective P.I. of the BE Unit with information to the Project Co-ordinator (PC), Project Monitoring Unit (PMU) at NIVEDI, Bengaluru.
4. Following confirmation of the submitted isolate, a BR Accession No. will be assigned which will be informed to the P.I. of the respective BE unit with a copy to the PC, PMU at NIVEDI, Bengaluru.
5. A training for isolation and preliminary identification of *Brucella* from clinical samples will be organized at BR Unit at ICAR-IVRI, Izatnagar for the PI/Co-PI/SRF/JRF of the BE Units of the Network project.
6. Number of isolation should be increased to 200
7. All the data should be included and gaps in data should be generated in next 2 years.

8. Attempt to isolate *Brucella* from right clinical samples. Isolation should be attempted from stomach content. If animal is seropositive after abortion attempt from seropositive animal milk as huge amount of *Brucella* will be present in colostrums.
9. The multiplex PCR developed by DFRL, Mysuru can be used for confirmation of *Brucella* species.
10. Emphasis should also be given on publishing research papers through PMU. The annual reports data should be restrained from misuse at any public domain.
11. Brucellosis network should publish multi centric manuscripts including all PI contribution to increase the visibility of the project.
12. Epidemiology groups should also take up sample collection and generate epidemiological data for the adjoin states other than their own state. The group should try to study the different risk factors associated with disease after following proper sample frame and questionnaire methodology.
13. More number of clinical isolates from different species should be submitted for genome sequencing.
14. Integration of all the 8 units epidemiological data to get the country picture.

B. Brucellosis Vaccine

1. Omp25, BP26 and L7/L12: test the combination of 3 antigens using PLG particles and challenge with *B. melitensis* also.
2. CMI responses to vaccination should be studied- in detail.
3. Study on BP26 in detail should be undertaken.
4. Deletion mutant (S19 Δ) vaccine should be tested in large animal. The vaccine performance in large animals should be checked 2 different parts (In the 1st part, Antigen specific antibody responses and CMI responses should be evaluated and in the 2nd part, the shedding and persistence of vaccine strain should b determined).

C. Brucellosis Diagnostics

1. The achievement of BD is very significant and appreciable.
2. FPA should be validated with samples from goat and sheep OPS from *B. abortus* should be validated with *B. melitensis* and *B. suis*.
3. BD-2 should find out the best combination of recombinant proteins for diagnostic purpose.

GENERAL RECCOMENDATIONS

- Referral centre of OIE for Brucellosis needs to be established in India.
- Timely submission of UC for release of funds.
- Submission of monthly reports within 10th of next month.
- Comprehensive report of last three years not more than 10 pages should be submitted to PMU from all units so that all data will be compiled and forwarded to DBT.
- Next Mid-term review in the month of May/June.
- Some wet lab experiments can be planned for predictions made by Bioinformatics group.
- Publications especially in Peer reviewed International journals is more important.
- Next Annual meet in November in Guwahati.

List of Participants - 3rd Annual Review Meet on DBT Network Project on Brucellosis held on 19th -20th November 2015 at DFRL, Mysuru

1. Dr. S. R. Rao, Advisor, DBT
2. Dr. H. Rahman, Director and ICAR-NIVEDI, Bengaluru.
3. Dr. Ramesh Vemulapalli, Professor and Department Head, Department of Comparative Pathobiology, Purdue University, USA.
4. Dr. Harsha Vardhan Batra, Director and Scientist 'G', DFRL Mysuru.
5. Dr. Satish Gupta, Emeritus Scientist, Former Deputy Director, NII, New Delhi.
6. Dr. Shaikh Shah Hossain, Public Health Specialist, CDC-India, New Delhi
7. Dr. Rajeswari Shome, PI, BE-1, ICAR-NIVEDI, Bengaluru.
8. Dr. B.S. Chandel, PI, BE-2, SDAU, Gujarat
9. Dr. G.K. Saikia, PI, BE-3, AAU , Guwahati
10. Dr. I. Shakuntala, PI, BE-4, ICAR Research Complex, Umiam, Meghalaya
11. Dr. J.P.S. Gill, PI, BE-5, GADVASU, Ludhiana, Punjab
12. Dr. N.S. Sharma, PI, BE-6, GADVASU, Ludhiana, Punjab
13. Dr. Nitin Kurkure, Co-PI, BE-7, MAFSU, Nagpur
14. Dr. Puran Chand, PI, BD-1, LLRUVAS, Hisar, Haryana
15. Dr. M. Nagalingam, PI, BD-2, ICAR-NIVEDI, Bengaluru.
16. Dr. Rathnagiri Polavarapu, PI, BD-3, Genomix, Hyderabad
17. Prof. Rakesh Bhatnagar, PI, BV-1, JNU, NewDelhi
18. Dr. Pallab Chauduri, PI BV-2, IVRI, Izatnagar
19. Dr. D.K. Singh, PI, BR, IVRI, Izatnagar.
20. Dr. J. Rajendran, PI, BB, MKU, Madurai.
21. Dr. Manjunatha Reddy GB, In charge scientist, PMU, ICAR-NIVEDI, Bengaluru.
22. Dr. Krithiga N, Research Associate, BE-1, ICAR-NIVEDI, Bengaluru.
23. Patel Bharath. K, BE-2, SDAU, Gujarat
24. Yogeswar Sadhu, BE-6, GADVASU, Ludhiana, Punjab
25. Dr. Sarika Poonia, JRF, BD-1, LLRUVAS, Hisar, Haryana
26. Ms Thaslim, JRF, BD-2, ICAR-NIVEDI, Bengaluru.
27. Prudhvi Chand, BD-3, Genomix, Hyderabad
28. Ms.Damini Singh, SRF, BV-1, JNU, New Delhi.
29. Sonal Guptha, SRF, BV-1, JNU, New Delhi
30. Syed Atif Ali, JRF, BV-2, IVRI, Izatnagar
31. Mr. Sankarsubramanian, SRF, BB, MKU, Madurai.





Glimps of 3rd Annual Review Meet of DBT - Network Project on Brucellosis at DFRL, Mysuru