

Proceedings of the Third Meeting of the Consortium Advisory Committee (CAC) of the NAIP Sub-Project on “Arsenic in Food-Chain: Cause, Effect and Mitigation”

The third CAC meeting of the sub-project was held on March 27 - 28, 2009 at the Directorate of Research building of Bidhan Chandra Krishi Viswavidyalaya, Kalyani, Nadia, West Bengal.

On March 27, 2009, Dr. J.K. Malik and Dr. S. Bandyopadhyay, the external members of the Consortium Advisory Committee (CAC) started their visit from the Laboratory of the BCKV center located at Mohanpur. Dr. S. Bhattacharya, Co-PI, explained to them the progress of work for addressing the objectives one and two as well as the role of various instruments like PCR, RTPCR, etc., used for various experiments under the project. These members next visited the laboratory of WBUAFS center located at Mohanpur. Dr. T. K. Mandal explained the performance of AAS and other research activities of the laboratory. While visiting this laboratory, they made the following comments.

- Protocols have to be standardized and should be available on the working table.
- Food samples like rice, other cereals, pulse, oilseed, fish and meat, etc., with known arsenic status have to be procured from the Standard International Institute like NIST, USA to assess the accuracy of the result on arsenic status of various food materials reported by the project laboratories.
- Standard grade and make chemicals should be used for preparation of the standard (calibration) curve.
- Data on arsenic concentration of food material have to be cross-checked with the Standard Institute like NRC Grape, Pune, and also among the laboratories of all the partners.

After lunch both the members visited the laboratories of BCKV center located in the Research Directorate building of the University at Kalyani. The RAs and SRFs interacted with them. Dr. K. Bhattacharya explained to them how the HPLC-ICP-MS, helps in speciation study of arsenic. Then they visited all the six villages to see the field experiments being conducted by BCKV, CIFRI, WBUAFS and IVRI (ERS). They also met sizable number of population belonging to Cohort I and II being examined by DNGMRF.

The Director of Research, BCKV; CPI, CCPIs and other CO-PIs accompanied them during the entire laboratory and field visit and replied against their quires related to the project work.

On March 28, 2009, the CPI and the CCPIs made the presentation on technical and financial progress of the lead and different cooperative centers. The meeting started at 9.00 h and continued till 14.00 h. Due to absence of Dr. I.P. Abrol, Dr. S. Bandyopadhyay Chaired the meeting. The following participants were present in the meeting.

1. Dr. S. Bandyopadhyay, Scientist F, CGCRI, CSIR, and External Member
2. Dr. J. K. Malik, Joint Director of Research, IVRI, ICAR and External Member
3. Dr. A. Bandyopadhyay, National Coordinator (Component 4), PIU, NAIP, Member
4. Dr. S. Sarkar, CPI of the Consortium, BCKV, Member-Secretary
5. Dr. S. K. Sanyal, Director of Research & CO-PI, BCKV, Invitee
6. Dr. D. N. Guha Mazumder, CCPI, DNGMRF, Invitee
7. Dr. T.K. Mandal, Co-PI, WBUAFS, Invitee
8. Dr. S. Samanta, CCPI, CIFRI, Invitee
9. Dr. A. K. Bera, CCPI, IVRI (ERS), Invitee
10. Dr. A.C. Sinha, Director of Research & Co-PI, UBKV, Invitee
11. Dr. S. C. Kole, Co-PI, BCKV, Invitee
12. Dr. S. Mandal, Co-PI, BCKV, Invitee
13. Dr. S. Bhattacharyya, Co-PI, BCKV, Invitee
14. Dr. K. Bhattacharyya, Co-PI, BCKV, Invitee
15. Dr. C. K. Kundu, Co-PI, BCKV, Invitee
16. Dr. D. Bhattacharya, Co-PI, IVRI (ERS), Invitee
17. Dr. Arup Sarkar, UBKV, Co-PI, Invitee
18. Dr. P.K.Paul, UBKV, Co-PI, Invitee
19. Dr. S. Manna, CIFRI, Co-PI, Invitee
20. Dr. B.P.Mohanty, CIFRI, Co-PI, Invitee
21. Dr. K.K. Mazumder, DNGMRF, Co-PI, Invitee
22. Mr. S. Mitra, DNGMRF, Finance Manger, Invitee

The meeting started with the welcome address delivered by Dr. S. Srakar, CPI. Dr. S. K. Sanyal, Director of Research, BCKV made introductory remarks. Thereafter, the CPI presented the progress of the research work and the financial status of the lead center. The CCPIs / Representatives from all the Cooperating Centers also made

presentation on financial progress as well as the work done so far by the respective Cooperating Centers. A thorough discussion took place on the presentations where the Co-PIs also made active participation as and when required. The essence of such discussion is incorporated in the given Proceedings. Many suggestions came from the Chairman and the External Members of the CAC as well as the National Coordinator (Component 4), PIU, NAIP. These suggestions are also incorporated in the Proceedings which are to follow.

Proceedings of the Meeting of the CAC

Technical

Remarks made by the Chairman, Members and the National Coordinator on the presentations made by the CPI / CCPI / Co-PIs on the progress of project work are presented below.

1. Lead center should follow proper statistical design for baseline survey and farmers field experiments.
2. Correlation has to be developed in-between arsenic status of water-soil and various plant parts.
3. To address the second part of objective one of the approved proposal, arsenic status in different plant parts has to be assessed either at important phenophases or at a regular time interval.
4. Role of microbes on phosphate status of soil has also to be studied along with that of arsenic.
5. In case of experiment on maize, details of grain roasting like: crop stage, source and amount of heat, total time of heating, etc., have to be mentioned.
6. Besides arsenic, status of available phosphorus has also to be assessed in water management studies.
7. In case of analysis of farm yard manure, following points have to be taken care of: Source, status of arsenic, phosphorus and other minerals, ratio of humic acid-C/ fulvic acid-C, microbial biomass carbon. Dr. K. Bhattacharya of BCKV has advised to collect the FYM analysis data from UBKV and correlate the same with soil arsenic status for both the center. Regarding microwave digestion he should visit the Central Food Research Laboratory, Kolkata for detailed working procedure.

8. Sample size of base-line survey as collected by UBKV center is small. This center should follow the guidelines given by DNGMRF, Kolkata.
9. Both BCKV and UBKV undertook trials on impact of SRI technique on rice grain-arsenic status.
10. UBKV should follow the standard protocols for field and laboratory studies. This center can drop the present pot experiments.
11. UBKV should correlate arsenic and phosphate status in various plant parts for different rice cultivars.
12. Both BCKV and UBKV should work out the impact of soil thermal status on rice grain-arsenic content.
13. WBUAFS center should analyze kidney arsenic status of poultry and local birds.
14. WBUAFS should include biomarker study in the assessment of the arsenic toxicity.
15. WBUAFS along with DNGMRF would try to correlate the arsenic status of straw-cow milk and human urine / blood.
16. A controlled condition study may be taken up by WBUAFS on examination of the effect of exposure of animals to varying levels of arsenic toxicity as well as exposure time and its impact on animal health.
17. Both WBUAFS and IVRI (ERS) should prepare a combined base-line survey report and present the same in the next meeting of the CAC.
18. IVRI (ERS) center should mention the name of the rodents, i.e., rat or mice. They should conduct studies on mice. This center should assess arsenic status of field rats and earthworms.
19. This center (IVRI-ERS) should focus on immunological studies.
20. IVRI (ERS) should identify biomarkers for forecast on level of arsenic toxicity of animals.
21. CIFRI center should generate the database on land slope, amount of run-off water, rainfall, etc., and correlate the same with pond water arsenic status.
22. This center should report the temporal changes in pond arsenic status and present the same in graphical form.

23. CIFRI center should correlate pond water arsenic status with the arsenic status of different fish species like Rohu, Katla, etc., and find the reasons for varying degrees of arsenic status in different fishes exposed to the same level of arsenic toxicity.
24. In future this center should report the dissolved oxygen and eH status of pond water and sediment.
25. As molasses / snail, etc., are more sensitive to arsenic toxicity, a database on their population has to be worked out and these species can be used as markers of pond water arsenic toxicity.
26. DNGMRF should attempt to work out the reasons for poor R^2 value of arsenic status of food material against that of urine and blood of human. This center should consult Dr. D. Mazumder, a Co-PI of the project (at the BCKV centre), for adoption of appropriate statistical methods so that higher R^2 value can be obtained.
27. This center (DNGMRF) can put arsenic status of water, food and urine samples in a three-way table.

Administrative

1. CCPIs should submit the research findings to the CPI and Dr. S. K. Sanyal for scrutiny before placing the same in the project website.
2. The CMU should assist to prepare reports, website matter, etc., from time-to-time.
3. Scientists involved in this project should try to publish research articles in highly rated National and International Journals.

Financial

The CPI made an appeal to the CAC for according approval on the under-mentioned financial aspects.

1. Reviewing the progress of work made by DNGMRF as well as the workload of this center there is a need for one additional SRF for this center. This SRF will operate the lung function machine as well as analyze the dietary samples. The National Coordinator agreed with this proposal and advised the CPI to make a formal request to him to this effect for obtaining the approval from PIU, NAIP.

2. The National Coordinator also approved the request made by the CPI to utilize an amount of maximum one lakh from unspent amount of equipment grant for repairing of an existing AAS (under the control of Dr. S.K.Sanyal). This will help in estimation of total arsenic status of water / soil / plant samples of BCKV center as per its time schedule.
3. During 2009-10 and 2010-11, there is no allotment of fund under the head of seminar / workshop, etc. During the first two financial years, expenditure made by the lead center to organize CIC/CAC or farmers meeting was met from the fund allotted under this head. However, under the head of “others”, Rs. 2 lakh has been allotted in each financial year. The CPI made a request to allow the lead center to utilize this fund for conducting CIC / CAC and other meetings. He also appealed for allowing the lead center to utilize this fund in procuring: computer programme, anti-virus packages, consumable spares of instruments as well as repairing cost of project equipments.
4. The National Coordinator (C-4), PIU, NAIP agreed for an additional fund under operational cost head and the (maximum) demand should not exceed 5% of the total budget of the project already sanctioned. The amount will be Rs. 35 lakhs for the coming three financial years. The CPI has been advised to make a center-wise and yearly break-up based proposal for the same and submit it to PIU, NAIP for its kind consideration.

Members of the CAC agreed on these financial issues and approved the same.

The meeting ended with a vote of thanks proposed by Dr. S. K. Sanyal, Director of Research, BCKV.