



Central Drug Research Institute, CSIR, Lucknow 59th Annual Day Report

by

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Distinguished guests, friends and colleagues, it is my pleasure and privilege to welcome you all to the 59th Annual Day function of the Central Drug Research Institute. I express my most sincere gratitude to Dr. S. Sivaram, Director, National Chemical Laboratory, Pune for so generously acceding to our request to grace this occasion as our Chief Guest. Dr. Sivaram the senior most Director in our CSIR family is a distinguished polymer chemist and, surprisingly, this happens to be his first visit to CDRI. I, on behalf of my staff as well as on my own behalf, most cordially welcome you to our Annual Day function.

I am extremely grateful to you Prof. MK Mishra, Vice-Chancellor, Lucknow University and another very distinguished chemist of our country for so readily agreeing to preside over this function and I welcome you warmly on behalf of everyone of this institute.

I am very pleased to see two very distinguished Chemists on the Dias today which shows the importance of chemistry-biology interface to fulfill this institute's mandate.

I take this opportunity to express my sincere thanks to Prof. Dr. Herbert Waldmann, Director, Max Planck Institute of Molecular Physiology & Prof. of Organic Chemistry University of Dortmund who was our special guest today and delivered the Mellanby Memorial Oration in the morning in memory of our founder Director Sir Edward Mellanby.

I extend my special welcome to my esteemed predecessors, Dr Nitya Nand, Dr. BN Dhawan, Dr. VP Kamboj, Dr. CM Gupta and Dr. R Tuli, Fellow Directors of other institutes in Lucknow Dr. KC Gupta, Dr. Ram Rajsekaran and others, distinguished members of our RC and scientists of medical and scientific fraternity from Lucknow, our present and former colleagues who are here with us today – gracing this function. Finally, I welcome each one of you – especially friends from the Press and Media.

I shall now apprise you with the progress of various R&D activities during the last one year.

- I inform with great pride that this year too CDRI received the prestigious CSIR technology award for Innovation for 2009. This was awarded for discovery and development of new synthetic endoperoxide antimalarials as synthetic substitute for drugs based on Artemisinin, derived from the plant

- Artemisia annua*. This is the 2nd consecutive year that this prestigious award has come to CDRI.
- Our efforts in the area of Osteoporosis have yielded good results and we have licensed the process know-how for CDRI1020F147 to M/s Natural Remedies Pvt., Ltd., Bengaluru for further development and marketing the product as nutraceutical and dietary supplement for optimum bone health. I congratulate all my colleagues involved in the development of this product for their achievements.
 - A single plant based natural memory enhancer formulation “Bacosides Enriched Standardized Extract of Bacopa” (BESEB) was developed at CDRI and licensed to M/s Lumen Marketing Co., Chennai for manufacturing and marketing. Lumen and Zaar Distributors Pvt. Ltd., New Delhi has now joined hands for extensive marketing of the product in India as **Memory Sure** which will be launched today in CDRI.
 - The ongoing and new drug discovery R & D programs of the institute have made steady progress. Significant advances have been made on the two new antimalarial products licensed to IPCA Laboratories. Phase I clinical trials are in progress to assess safety and tolerability of Compound - 97/78, a synthetic substitute for naturally occurring artemisinin at PGIMER, Chandigarh. Single dose study in 50 healthy human volunteers has been completed.
 - Another orally effective synthetic trioxane 99/411 was found safe in toxicity studies in rhesus monkey. Its half-life and anti-malarial profile are better than earlier molecules. Pre-clinical data compilation for IND filing is under process.
 - Development of combination therapy of CDRI molecules along with other established antimalarials are continuing to overcome the problem of drug resistance. The role of host immune regulatory and adhesion molecules and complement receptors on malaria susceptibility have been elucidated and structure and function of antigenic Plasmodium falciparum proteins to identify new drug targets are being carried out. With these antimalarials in advanced stages and other leads under study, CDRI continues to maintain a strong position in this area.
 - Multi-centric clinical trials were concluded on the blood schizontocidal antimalarial drug, α,β -arteether for pediatric use. The data on 235 pediatric cases is promising and provides evidence for its suitability and efficacy. The dossier has been compiled and submitted to DCG(I) for marketing permission. The drug is already being marketed in India and several African countries by Themis India under the trade name of E-Mal.
 - The Phase III multi-centric clinical trial on the lipid lowering compound 80/574 in combination with Atorvastatin has been planned and permission from DCG(I) is awaited. The product is under a collaborative-cum-licensing agreement with Cadila Pharmaceuticals Ltd.
 - Phase III clinical trials, to evaluate the hepatoprotective effect of Picroliv in patients of tuberculosis receiving multi-drug treatment has been concluded. The data has been compiled and detailed analysis is in progress. An interim analysis of the data shows enhanced clinical recovery in Picroliv treated tuberculosis patients.
 - The anti-cerebral stroke herbal preparation called Herbal Medicament has been found safe in toxicity studies in rhesus monkey. We propose to file an

- IND on this preparation along with the industry partner Themis Medicare and the pre-clinical data is being reviewed by the regulatory divisions of CDRI.
- Anti-hyperglycemic agent CDR-134-D123 has been found safe in single and multiple dose tolerance Phase I clinical studies. The data has been compiled and report submitted to Department of AYUSH for marketing permission.
 - An IND application filed on the antihyperglycemic agent CDR-134F194 from marine source has been reviewed by experts. Replies to queries from DCG(I) are under preparation to expedite the final approval.
 - CDRI has made significant contribution in the area of osteoporosis. An antiresorptive synthetic compound 99/373 has been cleared for phase I clinical studies by DCG(I). The plan and protocol for the trial have been approved by the IEC, PGIMER, Chandigarh. Synthetic derivative S-007-1500 of one of the active compounds isolated from the standardized fraction NP-1, which showed very significant bone-forming activity not only promoted peak bone mass but also accelerated fracture healing in rats. Two novel compounds were isolated from another plant exhibiting strong osteogenic activity. Further studies are in progress.
 - An anti-thrombotic agent S-007-867 synthesized in our laboratory exhibited significant protection in various models of thrombosis and against human platelet aggregation. The mechanism of action studies revealed that the compound has a better profile than the currently used standard drugs.
 - Pre-clinical studies on the standardized fraction exhibiting significant anti-ulcer profile including ulcer-healing activity have been completed. The product has been taken-up by Arya Vadiya Sala for commercialization and marketing. Two pure compounds and a standardized fraction as good anti-dementia agents and one compound exhibiting anti-hypertensive activity have been identified. Further studies are in progress.
 - A number of interesting hits were identified for anti-thrombotic, anti-ischemic, anti-hypertensive, anti-dementia, antiulcer, anti-hyperglycemic, anti-filariasis, anti-osteoclastic, osteogenic, anticancer and immunomodulatory activities. In some of them mechanism of action and the targets are being determined to design superior candidate structures.
 - Our partnership with global health agencies viz. Drugs for Neglected Disease Initiative (DNDi) for Lead identification for anti-leishmanial compounds; European Commission for Targeting protein synthesis in the Apicoplast and cytoplasm of Plasmodium and WHO for Development of new macrofilaricidal and/or embryostatic agents progressed satisfactorily. This reflects our strength towards developing joint programs on global platforms.
 - The infrastructural facilities at CDRI have been further strengthened. A DST supported state-of-the-art National facility for Regulatory Pharmacology and Toxicology; National Centre for Pharmacokinetic and Metabolic studies and a Laboratory for Functional Genomics and Molecular Toxicology have been established. A facility for Phase-I clinical trial has been set-up at Seth GS Medical College, Mumbai to accelerate clinical trials of CDRI candidate drug molecules. These facilities would help in generating pre-clinical safety and toxicity data as per GLP requirements.

- All regulatory studies including Safety pharmacology, Regulatory toxicology and Pharmacokinetics on CDRI candidate drugs are being undertaken as per CDRI GLP Directive Document.
- The project on Setting up a World-class Drug Research Institute in Lucknow which took off on August 4, 2007 is making good progress with construction work moving as scheduled. The state-of-art laboratories being constructed at this new site would enhance competitiveness and also attract high-level expertise in almost all disciplines of the institute.
- I formally welcome our new members to the CDRI family, and wish them a very productive and distinguished career at this institute. CDRI continued to attract some of the most competitive students to its Ph.D. program and research projects. The number is increasing continuously and this year 112 new JRF/SRFs have joined. The Institute feels proud of its more than 350 Junior and Senior Research Fellows who contributed immensely not only to our research programs but also to our image nationally and internationally by joining pharma companies and post-doctoral positions abroad. I acknowledge with pride the dedication and brightness of these youngsters and their contribution in building a self-reliant nation.
- Some of our existing staff was deputed for training in emerging areas. 29 scientists received advanced training and we look forward to their role in invigorating our research programs with new technologies and managerial capabilities.
- This year, **59 CDRI students** submitted their Ph.D. thesis including 31 under the CDRI-JNU programme. Besides, long-term as well as short term training was provided by CDRI to fellows from academia and Indian industry. Four foreign scientists were provided training under the International Bilateral Cooperation. Furthermore, **242** postgraduate students from various Indian Universities were given 4-6 weeks training during the year.
- **Papers and Patents** – About our performance in 2009, I have great pleasure to inform you that in 2009 we published a total of **289** research papers, with an average **IF of 2.59**. There is increase both in number, 53 more than previous year and in quality. This includes 37 research papers having IF >4 and 46 papers with IF between 3 and 4. We have filed **09** Indian and **09** foreign patents each and were granted **12** Indian and **15** foreign patents this year. I would like to congratulate the team of scientists whose works have been published in high IF journals and some of them will receive the Appreciation Certificates today.
- **Awards** – Many CDRI scientists, like previous years, received several honors and awards. Dr. C.M. Gupta was recipient of the Distinguished Biotechnology Research Professorship Award, Department of Biotechnology, Government of India; Dr. S.K. Puri was conferred the Fellow of National Academy of Sciences, India and Dr. C Nath, Fellow of Indian Academy of Neurosciences, India; Dr Ashim Ghatak received the Dr. Coelho Memorial Oration award in Experimental Medicine – 2009 by The Association of Physicians of India; Dr. Sanjay Batra received The Most Cited Paper 2006-2009 Award in Tetrahedron; Dr. Atul Goel, Dr. Ghanshyam Srivastava Memorial Award - 2007, Indian Chemical Society of India; Dr. Renu Tripathi, Dr. G.D. Bhalerao Award 2009, Zoological Society of India; Dr. N. Chattopadhyay Editorial Advisory Board Member,

Biochemical Pharmacology (Elsevier Journal), and American Journal of Physiology (Official journal of the American Physiological Society); Dr. Ravishankar R, Advisory Board Member by the Trends in Carbohydrate Chemistry; Ms. Jyoti Pandey, DST-DFG Award for Participation in the Meeting of Nobel Laureates & Students – 2009; Mr. Abhishek Dey, Prof. David Blow Fellowship to attend the CCP4 meeting in UK in January 2010; Ms. Gauri Misra, Eli Lilly Asia Outstanding Thesis Award - 2009 (First Prize), Mr. Sumit Chaurasia, Eli Lilly Asia Outstanding Thesis Award - 2009 (Second Prize). I congratulate them all for enhancing the image of our institute and bringing us accolades.

- **ECF** – The year 2009-2010 has seen severe financial crunch. But CDRI could somehow manage to sail through this difficult year without much hiccup largely due to an EBR of nearly over 18.3 Cr so far, an all time high. It is to our credit that only 43% of it is Grant-in-Aids. Remaining is from industry, and overseas funding agencies. During last 7-8 months time we got about 22 new projects worth of ~ 6.5 Cr approved. The number will surely increase in the coming days and I congratulate and thank all the scientists for their renewed vigor, commitments and increased self-reliance.
- The grant-in-aids we received are from the Ministry of Health and Family Welfare, Ministry of Earth Sciences, Indian Council of Medical Research, Department of Science and Technology, and Department of Biotechnology. We express our most sincere gratitude to these agencies and to my colleagues who attracted funds and enhanced our contributions to nation building.
- The institute continued receiving support from the Director General of Health Services & Family Welfare and Medical Education, Govt. of U.P.; Vice-Chancellor, CSM Medical University; Director, SGPGL, and other medical institutions away from Lucknow who help us - particularly in conducting our clinical trial studies. I deeply value their help and support and express my grateful thanks to all of them.
- **I feel sad to report the untimely demise of five of my colleagues during the year. May God rest their soul in peace!**
- 30 of my colleagues have superannuated during the last one year after their long association with the institute. I wish them a happy and healthy life.
- I feel very grateful to all my colleagues - at all levels in CDRI – for having extended their fullest co-operation and especially Dr. Shailja Bhattacharya and her team for having taken the responsibility of various activities connected with our Annual Day. I thank specially Mr. Deswal and the entire security team, Dr. Sharma and the gardening team of CDRI for making the surroundings so clean, Dr. Rana and Anil Dayal for all the arrangements. I thank all the scientists, especially the Area Coordinators, Assistant Coordinators and Area Leaders for giving timely feedback for preparing the Annual Report. My sincere thanks to the whole team who prepared this Annual Report – Dr. AK Goel, Dr. Anand Kulkarni, Dr. Zaka Imam, Dr. Rajendra Prasad, Mr. Vinay Tripathi, Mr. Suman Mallik, Dr. DN Upadhyay, Mr. Prem Prakash, Dr. SR Kulkarni, Ali Kausar, Chandrika Singh, Manoshi Chatterjee, Jitendra Patel. I must also thank Dr. Alka Singh who in spite of her extremely hard work taking care of our 350 students, has managed to find time to prepare this speech.

- Finally, I thank the local press, Doordarshan and all India Radio for giving adequate coverage to our R&D efforts during the year.
- **CDRI Award 2010** – Before I conclude, I have an important announcement to make – I am going to announce the names of the recipients of this year's CDRI Award. The prestigious CDRI Award for Excellence in Drug Research for the year 2010 in Life Sciences have been awarded to Prof. Dulal Panda of IITBombay for his work on "Understanding the assembly dynamics of the bacterial cell division protein FtsZ and its use for screening of new antibacterial agents"
And in Chemical Sciences the award has gone to Prof. G. Mugesh of IISc, Bangalore for his work on "Understanding the role of metals in the metalloproteins related to hyperthyroidism and antibacterial resistance and synthesis of inhibitors against them". Our heartiest congratulations are to the winners of the award. The awards will be handed over to the recipients in a befitting program to be held in CDRI on a suitable day in the near future.
- My report will remain inconclusive today if I do not say a word or two to express my personal feelings on our overall performance. The overall enthusiasm and positive spirit that I see today in all members of CDRI family make me feel very happy and optimistic. I am confident that we have a bright future ahead. I thank everyone for your help, cooperation, dedication and hard work.
- To end, I thank you all for gracing this occasion and for patient hearing. Thank you!!