ANNUAL REPORT
2003-2004

Vallabhbhai Patel Chest Institute
University of Delhi, Delhi

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ANNUAL REPORT (2003-2004)

CONTENTS

Foreword

I have great pleasure to present the Annual Report of the Vallabhbhai Patel Chest Institute (VPCI) for the year 2003-2004. The Institute continued its research, teaching, patient care and academic activities and the details of these are provided in the subsequent pages of this Report. A symposium on "Tuberculosis" was organized on 6th April 2003 and the 5th VPCI Oration was delivered by Prof. J.S. Bajaj, Former Professor and Head, Department of Medicine, AIIMS and Former Member, Planning Commission, Government of India on 7th April 2003 as part of the 54th Foundation Day celebrations. The third CME programme in Respiratory Diseases for the General Practitioners held on 3 - 4 May 2003 was a great success. The Annual Workshop on Respiratory Allergy : Diagnosis and Management was organized from 4 – 10 June 2003 in which many Physicians from all parts of the country participated. The Institute had the opportunity to organize the Annual Conferences of two National Scientific Societies: The 36th Annual Conference of the Pharmacology Society of India was organized from 4 – 7 December 2003 at India Habitat Centre, New Delhi and the first Congress of the Indian Association of Sarcoidosis and Other Granulomatous Disorders at the Institute on 12th January 2004. The Institute also organized a Workshop-cum-Training Programme on "New Perspectives in Drug Delivery and Development on 8 – 9 December 2003 and this Workshop was sponsored by the Department of Science & Technology, Government of India.

As the Institute has been organizing many International and National Conferences and also Symposia/Seminars frequently, the need for a well-equipped Auditorium in the premises of the Institute was felt for a long time and an Auditorium-cum-Convention Centre to commemorate the Golden Jubilee of the Foundation of the Institute was approved by the Planning Commission and the Ministry of Health and Family Welfare, Government of India during the 10th Plan. The 'Bhoomi Pujan' for the construction of the Auditorium-cum-Convention Centre was performed on 28th May 2003. The renovation of this Institute buildings and addition of equipments for research/patient care especially the installation of the digital X-ray machine, Flowcytometry, etc., were also done during this period.

Faculty members delivered guest lectures/presented scientific papers in many National and International Conferences. An encouraging feature is the presentation of original scientific papers in International Conferences outside India by MD/PhD students and junior faculty members. The development of Library continued and a Web access to the catalogue of VPCI Library has now been uploaded on the Delhi University Campus Wide Network. The Institute has the privilege of being the first of its kind in the Delhi University network system to make the holdings of Library online.

Dr. V.K. Vijayan
Director

MILESTONES OF VPCI

April 6,	1949	Foundation stone of the Institute was laid down by Sardar Vallabhbhai Patel.
November	1951	Ad-hoc Governing Body was appointed by the Executive Council of University of Delhi for administrative affairs of the Institute.
December	1951	Main building of the Institute was completed.
January 12,	1953	The Institute was formally opened by Rajkumari Amrit Kaur, the Union Minister of Health, Government of India.
		Prof. R. Viswanathan was appointed as the first Director. The grant for 1953-54 was Rs. 2 lakh.
January 21,	1955	A regular Governing Body was constituted by the Executive Council of the University of Delhi for the management and administration of the Institute.
April 4,	1955	The first meeting of the regular Governing Body was held.
	1955	Prof. A.S. Paintal reported the discovery of lung deflation receptors, a historical landmark in understanding the functioning of lung and its diseases.
July 1,	1957	Prof. R. Viswanathan took over as full-time Director of the Institute. Previously, he was the Deputy Director General of Health Services, Govt. of India and Honorary Director of the Institute.
September 24,	1957	Pt. Jawaharlal Nehru said in a message : "It was a brave act of the University of Delhi to start the V.P. Chest Institute".
October 24,	1957	Clinical Research Centre was inaugurated by Dr Rajendra Prasad, President of the Republic of India.
January 24,	1959	Indian Association for Chest Diseases was inaugurated by Sir A.L. Mudaliar. It was rechristened as National College of Chest Physicians (India) in January 1981.
July	1959	*The Indian Journal of Chest Diseases*, a Quarterly Journal, was started under the joint auspices of the V.P. Chest Institute and the Indian Association for Chest Diseases.
July	1959	A ward of 20 beds was opened to admit patients.
	1959	By a resolution of the Governing Body, V.P. Chest Institute was nominated as a "National Institute for Teaching and Research in Chest and Allied Diseases.

January	1960	A Diploma course in Tuberculosis Diseases, which was started in March 1947, was re-designated as “Diploma in Tuberculosis and Chest Diseases” (DTCD) from XIV Course. The XV DTCD Course started from July 1960.
April 6,	1961	Celebration of Foundation Day of the Institute was started.
April 7,	1962	Foundation stone of Patel Niwas, a Post Graduate Hostel, was laid down by Dr C.D. Deshmukh, Vice-Chancellor, University of Delhi.
January 26,	1963	A contingent of V.P. Chest Institute staff participated in the Republic Day parade.
February 20-24,	1963	VII International Congress on Diseases of the Chest was held at Vigyan Bhawan under the auspices of V.P. Chest Institute, Indian Association for Chest Diseases and the University of Delhi.
August 1,	1964	Prof A.S. Paintal joined as the Director of the Institute after the retirement of Prof. R. Viswanathan.
April 6,	1965	Patel Niwas was inaugurated by Dr C.D. Deshmukh on the XVI Foundation Day of the Institute.
	1966	Prof. A.S. Paintal was elected Fellow of the Royal Society of Edinburgh.
	1969	Padma Shree was awarded to Prof. R. Viswanathan.
	1974	Padma Bhushan was awarded to Prof. R. Viswanathan.
	1981	Prof. A.S. Paintal was elected Fellow of the Royal Society of London.
	1984-85	Prof. A.S. Paintal was elected General President of the Indian Science Congress Association.
	1985	Prof. A.S. Paintal was appointed as Director-General of the Indian Council of Medical Research.
	1985-88	Prof. H.S. Randhawa was elected Vice-President of the International Society for Human & Animal Mycology.
	1986	Padma Vibhushan was awarded to Prof. A.S. Paintal.
	1986-88	Prof. A.S. Paintal was elected President of the Indian National Science Academy.
November 10,	1991	Prof. H.S. Randhawa joined as the Director of the Institute.
October 5,	1998	Dr V.K. Vijayan joined as the Director of the Institute.

April 6,	1999	Golden Jubilee Celebrations of the Foundation Day of the Institute. 1st VPCI Oration by Prof. N.K. Ganguly, Director-General, Indian Council of Medical Research.
June 14,	1999	24-hour Respiratory Emergency Services started.
November 12,	1999	His Excellency, Shri K.R. Narayanan, President of India, received the copy of Compendium of Activities (VPCI) 1949-99.
April 6,	2000	2nd VPCI Oration by Prof. A.S. Paintal, Ex-Director-General, ICMR and Ex-Director, VPCI.
August 30,	2000	A New Ward (with an additional 40 beds) was inaugurated by Dr A.K. Walia, Honourable Minister for Health, Govt. of NCT of Delhi.
March	2001	A Respiratory Critical Care Unit was started.
March 15,	2001	CT Scan Centre was inaugurated by Honourable Padma Shree Dr C.P. Thakur, the Union Minister of Health & Family Welfare, Govt. of India.
April 6,	2001	3rd VPCI Oration by Dr S. Lakshminarayanan, University of Washington School of Medicine, Washington, Seattle, U.S.A.
April 21,	2001	1st Refresher (CME) Course in Respiratory Diseases started.
November 21,	2001	Inauguration of Tobacco Cessation Clinic.
April 6,	2002	4th VPCI Oration by Dr S. Padmavati, President, All India Heart Foundation and Director, National Heart Institute, New Delhi.
August 14,	2002	Inauguration of the State-of-the-art Oxygen Plant by Prof. P.N. Srivastava, Chairman, Governing Body, V.P. Chest Institute.
January 12-14,	2003	International Conference on Chest Diseases and Allied Sciences was held at India Habitat Centre, New Delhi, to commemorate the Golden Jubilee of the Inauguration of the Institute.
April 7,	2003	5th VPCI Oration by Prof. J.S. Bajaj, former Professor and Head, Department of Medicine, All India Institute of Medical Sciences, New Delhi and former Member, Planning Commission, Government of India.
May 28,	2003	"Bhoomi Pujan" to start the construction work of the Auditorium.

THE INSTITUTE

The Vallabhbhai Patel Chest Institute (VPCI) is a post-graduate medical Institution devoted to the study of chest diseases. It is ideally located in the Delhi University main campus providing the requisite academic environment in which a wide range of scientific facilities are available in various departments along with an excellent Central Science Library.

Objectives

The main objectives of VPCI have been to conduct research on fundamental and clinical aspects of chest diseases, to develop new diagnostic technology and disseminate it to other institutes in the country and provide specialized clinical and laboratory services to patients. The training of post graduates in Pulmonary Medicine and allied subjects is another important objective of VPCI.

Administration

The VPCI is a maintained Institution of University of Delhi and is fully funded by the Grants-in-Aid received from the Ministry of Health and Family Welfare, Government of India. The Institute is governed and administered by its own Governing Body as Constituted under Ordinance XX (2) of the University of Delhi Act. The Director, who is appointed by the Executive Council of University of Delhi, is the Chief Executive of the Institute. The Director of the Institute also functions as Member-Secretary (Ex-Officio) to the Governing Body of the Institute. The composition of the Governing Body follows in the next page. The Institute also has a Standing Finance Committee constituted by the Governing Body to make recommendations about its budgetary requirements.

Organisation and Management

The organisation and management of the Institute is through Departmentation of activities based on various areas of specialization and functions. The Academic, Scientific and Clinical services are organized under the Departments of Anaesthesiology, Cardiorespiratory Physiology, Respiratory Medicine, Thoracic Surgery, Clinical Research Centre housing Outdoor/Indoor patient care services, and Departments of Biochemistry, Clinical Biochemistry, Biostatistics, Medical Mycology, Microbiology, Pathology, Pharmacology, Physiology, Radiodiagnosis and Imaging, Respiratory Allergy and Applied Immunology and Respiratory Virology. These departments are headed by the Faculty Members in the concerned area. The General and Personnel Management including various maintenance activities required for the Institute are supported by administrative services of the Institute which are available through following three sections controlled by the Deputy Registrar who reports to the Director. These sections are: *1.* Administration-I, *2.* Administration-II and *3.* Finance and Accounts. The administrative services and its sections functioning details are shown in the Administrative Structure chart in the succeeding pages.

GOVERNING BODY

CHAIRMAN	
The Vice-Chancellor, University of Delhi (Ex-Officio) or a person nominated by him	**Prof. P.N. Srivastava** Ex-Vice-Chancellor, J.N.U., New Delhi
MEMBERS	
Treasurer, University of Delhi (Ex-Officio)	**Mrs Janaki Kathpalia** *(15.01.2004 onwards)*
Two members of the Executive Council nominated by the Executive Council	**Prof. P.V. Indiresan** *(07.03.2003 onwards)* **Dr K.C. Tripathy** *(till 19.9.2003)* **Prof. S.P. Tiwari** *(3.11.2003 onwards)*
Dean, Faculty of Medical Sciences, University of Delhi	**Prof. B.K. Jain**
Three members nominated by the Ministry of Health and Family Welfare, Government of India, New Delhi	**Mr Rakesh Behari** Joint Secretary & Financial Advisor **Mr Anurag Goel** Additional Secretary & Financial Advisor **Mr Arun Sharma** Joint Secretary & Financial Advisor
	Smt. Bhawani Thyagarajan (*Joint Secretary)* **Dr S.P. Agarwal** *(Director General of Health Services)*
One Member, not connected with the University, appointed by the Executive Council	**Prof. J.N. Pande** *(07.03.2003 onwards)* *(Former Head, Deptt. of Medicine, AIIMS, New Delhi)*
One Professor of the Institute by rotation according to seniority for a period of one year	**Prof. K. Ravi** *(till 02.11.2003)* **Prof. Ashok Shah** *(03.11.2003 onwards)*
One Reader or Lecturer of the Institute by rotation according to seniority for a period of one year	**Dr Mandira Varma** *(till 02.11.2003)* **Dr Madhu Khanna** *(03.11.2003 onwards)*
MEMBER-SECRETARY	
Director, Vallabhbhai Patel Chest Institute University of Delhi, Delhi (Ex-Officio)	**Dr V.K. Vijayan**

Standing Finance Committee

Mr Rakesh Behari Joint Secretary & Financial Advisor Ministry of Health & Family Welfare Government of India Nirman Bhawan New Delhi	*Chairman*
Dr V.K. Vijayan Director V.P. Chest Institute University of Delhi Delhi	*Member-Secretary*
Prof. S.S. Thukral Head, Department of Microbiology V.P. Chest Institute University of Delhi Delhi	*Member*
Dr Binod Kumar Singh Deputy Registrar V.P. Chest Institute University of Delhi Delhi	*Member*

Scientific Advisory Committee

Prof. S.K. Jindal Head, Department of Pulmonary Medicine Post Graduate Institute of Medical Education & Research Chandigarh -160 012	*Chairman*
Dr V.K. Vijayan Director V.P. Chest Institute University of Delhi Delhi	*Member-Secretary*
DDG (M) Ministry of Health & Family Welfare Government of India New Delhi	*Member*
Principal University College of Medical Sciences Delhi	*Member*
Prof. M. Fahim Head, Department of Physiology V.P. Chest Institute University of Delhi Delhi	*Member*
Prof. Ashok Shah Department of Respiratory Medicine V.P. Chest Institute University of Delhi Delhi	*Member*

Ethics Committee

Prof. S.K. Jain Senior Consultant (Pulmonology) Mool Chand Hospital New Delhi	*Chairman*
Dr V.K. Vijayan Director V.P. Chest Institute University of Delhi Delhi	*Member-Secretary*
Prof. Paramanand Singh Dean, Faculty of Law University of Delhi Delhi	*Member*
Prof. K.K. Mukhopadhyay Head, Department of Social Works University of Delhi Delhi	*Member*
Dr Ashima Anand Principal Scientific Officer DST Centre for Visceral Mechanisms V.P. Chest Institute University of Delhi Delhi	*Member*

Animal Ethics Committee

Prof. M. Fahim — *Chairman*
Head, Department of Physiology
V.P. Chest Institute
University of Delhi
Delhi

Prof. K. Ravi — *Member-Secretary*
Department of Physiology
V.P. Chest Institute
University of Delhi
Delhi

Prof. S.S. Thukral — *Member*
Head, Department of Microbiology
V.P. Chest Institute
University of Delhi
Delhi

Prof. A. Ray — *Member*
Head, Department of Pharmacology
V.P. Chest Institute
University of Delhi
Delhi

Dr Rameshwar Singh — *Member*
Veterinary Surgeon-Incharge
Animal House
Defence Institute of Physiology and Allied Sciences
Lucknow Road
Delhi

Mrs Uma Tyagi — *Member*
Librarian
V.P. Chest Institute
University of Delhi
Delhi

Ms Geeta Seshamani — *Nominee of CPCSEA*
President
Friendicoes Seca, Shop Nos. 271 & 273
Below Defence Colony Flyover
New Delhi – 110 024

Prof. K. Muralidharan — *Nominee of CPCSEA*
Head, Department of Zoology
University of Delhi
Delhi

ORGANISATIONAL STRUCTURE

DIRECTOR

V.K. Vijayan, MBBS, DTCD, MD, MAMS, PhD, DSc, FCCP,
FNCCP (I), FCAI, FICC, FAMS

Biochemistry

H.G. Raj, MSc, PhD, CChem, FRSC
Professor

S.K. Bansal, MSc, PhD
Professor

Biostatistics

Mujeeb-ur-Rahman, MSc, PhD, PGDCP
Lecturer

Cardiorespiratory Physiology

S.K. Chhabra, MBBS, MD
Professor

Clinical Biochemistry

Vishwajeet Rohil, MBBS, MD
Lecturer

Medical Mycology

H.C. Gugnani, MSc, PhD, FRC (Path)
Professor (Upto 09.04. 2003)

(Mrs) Anuradha Chowdhary, MBBS, MD
Lecturer

Microbiology

S.S. Thukral, MSc (Hons), PhD
Professor

(Mrs) Mridula Bose, MBBS, MD
Professor

(Mrs) Malini Shariff, MBBS, MD, PhD
Reader

(Mrs) Mandira Varma, MBBS, MD, DNB
Lecturer

Pathology

(Mrs) Sonal Sharma, MBBS, MD
Lecturer

Pharmacology

A. Ray, MBBS, MD, MNAMS, PhD
Professor

Physiology

M. Fahim, MSc, PhD, Av HF (Germany), FAMS
Professor

K. Ravi, MSc, PhD
Professor

Vishal Bansal, MBBS, MD, DNB
Lecturer

Respiratory Allergy and Applied Immunology

M.K. Agarwal, MSc, PhD, FCAI
Professor

Balakrishnan Menon, MBBS, DMRD, MD
Lecturer

Respiratory Medicine

Unit - I

V. K. Vijayan, MBBS, DTCD, MD, MAMS, PhD, DSc, FCCP, FNCCP (I), FCAI, FICC, FAMS
Director

Ashok Shah, MBBS, DTCD, MD, FNCCP (I), FCAI
Professor

Unit - II

S. N. Gaur, MBBS, MD, FCCP, FNCCP (I), FCAI
Professor

Raj Kumar, MBBS, MD, FNCCP (I), FCAI, MIAOH
Lecturer

Respiratory Virology

(Mrs) Madhu Khanna, MSc, PhD
Lecturer

Clinical Research Centre
Officer-in-Charge
V. K. Vijayan

Library

(Mrs) Uma Tyagi, MPhil (Physics), MLib. Sci.
Librarian

Animal House

Rajinder Bajaj, BVSc & AH
Veterinarian

Administration

Binod Kumar Singh, MA (Publ. Admn), MA (Eng.), PGDPM, LLB, PhD
Deputy Registrar

DST Centre for Visceral Mechanisms

A.S. Paintal, MBBS, MD, PhD (Edin), DSc (Edin), FNA, FRS (Edin), FRS (London), FRCP (London)
Programme Director

(Mrs) Ashima Anand, MSc, PhD
Principal Scientific Officer

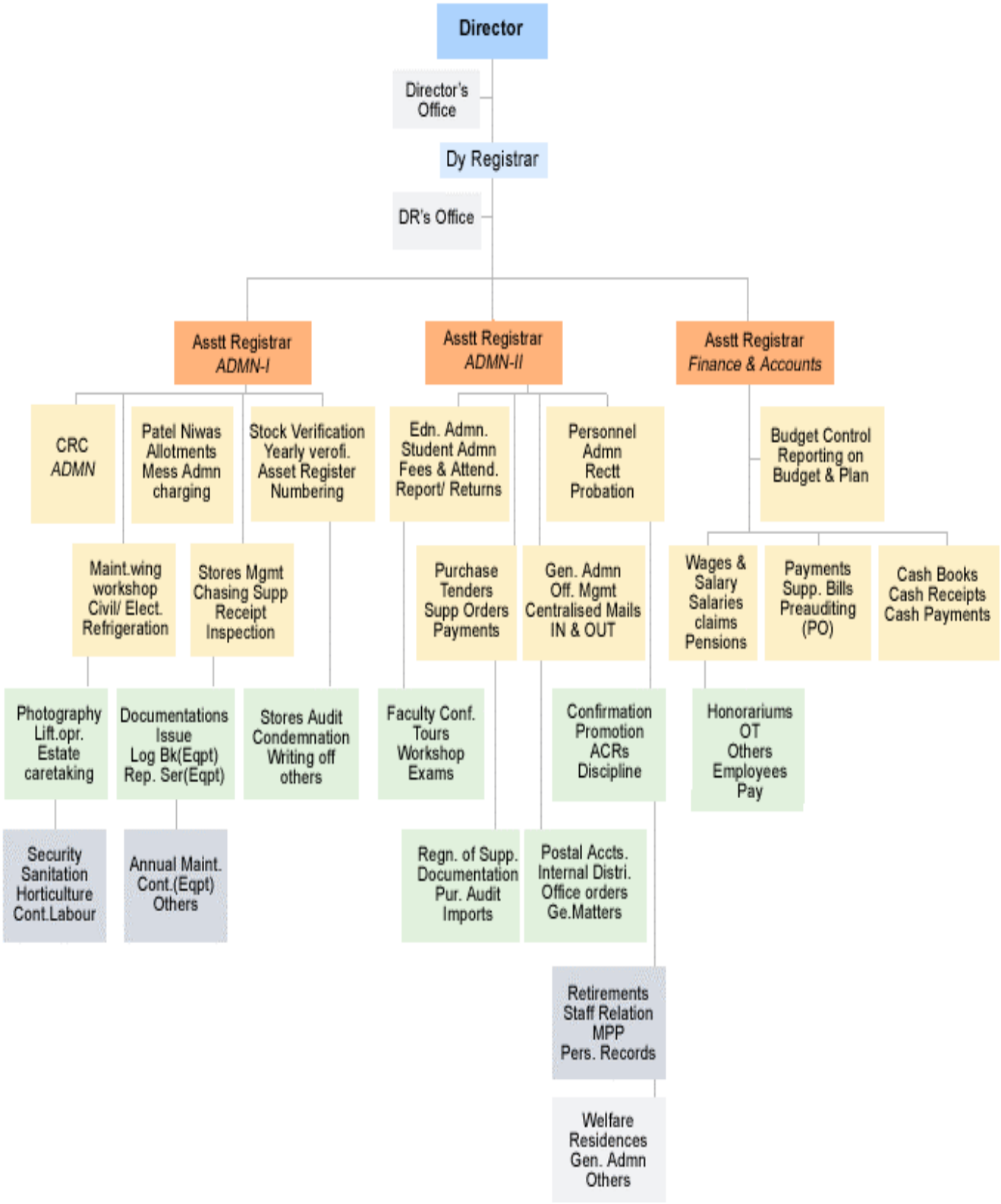
V.K. Singh, MBBS, PhD
Junior Scientific Officer

Hans Raj, MBBS, MD
Scientist (Hon.)

The INSA Honorary Scientists Scheme

H.S. Randhawa, MSc, PhD, FNCCP (I), FCAI

ADMINISTRATIVE STRUCTURE



CENTRAL FACILITIES

Clinical Research Centre

The Clinical Research Centre (CRC) is the hospital wing of the Institute with the following Departments/Facilities:

1. Respiratory Medicine (Two units),
2. Cardiorespiratory Physiology,
3. Respiratory Allergy and Applied Immunology,
4. Radiodiagnosis and Imaging (including CT Scan Unit),
5. Out-patient/In-patient Facilities,
6. 24 Hours Respiratory Emergency,
7. Tobacco Cessation Clinic.

During the year 2003-04, the CRC continued to provide specialized investigations and treatment to patients referred to this Institute.

The detailed data of patients attending CRC are as follows:

Number of new patients attending OPD	:	9722
Number of visits of old patients to OPD	:	41972

Total number of indoor patients

General Wards	:	1289
Emergency Wards	:	871
Total		2160
Emergency treatment provided	:	15317
Total number of patients treated in ICU	:	32

Number of specialized investigations done

Pulmonary function tests	:	20806
Arterial blood gases	:	767
Bronchoscopy	:	233
Bronchoalveolar lavage	:	56
CT scans	:	859
CT guided FNAC	:	91
Ultrasound examinations	:	613
USG guided procedures	:	42
X-rays	:	10934

Immunodiagnostic Laboratory

During this year the Institute started the Immunodiagnostic Laboratory for HIV testing. A total of 60 tests were performed from 5.8.2003 till 31.3.2004 of which four were positive.

Flowcytometry was also started in the laboratory from 16.10.2003 and 67 tests for CD3/CD4/ CD8 were performed.

Tobacco Cessation Clinic

A Tobacco Cessation Clinic has been running on every Monday and Wednesday from 2:30 – 4:30 P.M.

Dignitaries on the dias during the inauguration of the Symposium on "Global Challenges in TB: An Update" on 6th April 2003

Animal House

For experimental research involving live animals, the most reliable result will be obtained from animals that are healthy, unstressed and at ease with their surroundings. The main function of the Animal House centers around the objectives to supply adequate number of good quality (genetically and pathogen free) animals.

Institute Animal Ethical Committee (IAEC) keeps a check to promote the humane approach of animal experimentation with the basic objective of providing specifications that will enhance animal care and quality in the pursuit of advancement of scientific knowledge that is relevant to humans and animals.

The Animal House of the Institute is registered for Breeding and Experiments on Animals with Committee for the Purpose of Control and Supervision of Experiments on Animals (CPCSEA), Animal Welfare Division, Government of India.

The complete renovation and upgradation work of the Institute's Animal House is near completion. This upgradation will provide optimum environment for experimental animals and will meet international standards of animal experimental laboratories. Further, animal management will address ethical concern of the scientific community giving high priority to the welfare of laboratory animals and their judicious utilization.

Library

The Institute has one of the best library in the field of Pulmonary Disease and Allied Sciences having 9,591 Books, 17,211 bound Journals, 110 CD's, 413 Thesis and 75 National and International Reports. A total of 64 Journals (62 International and 02 National) are being subscribed, 19 Journals (07 International and 12 National) are being received on exchange programm with the Institute's Journal and 33 Journals (09 International and 24 National) on complimentary basis. Library is also subscribing, four English and two Hindi newspapers. Three Books and one Journal have been added in our collection during the financial year.

Library renders its services not only to the scientists/research scholars of the Institute, but also to other Colleges and Institutes of the University of Delhi. Library is also affiliated with British Council Division and DELNET (Developing Library Network) to access various databases like Union Catalogue of Books / Periodicals for providing timely and current information. Much emphasis is also laid on to provide abstracts, references, CAS and SDI services. Apart from this, online searches are being carried out for providing instant access of Information Resources to the desktop of researchers through LAN (Local Area Network). The *INTERNET* surfing and access to *MEDLINE* databases (1966+) has been provided right on the desktop of each Faculty Member through LAN and CD Mirror Server. Library also provides inter-library loan facilities and reprographic services on demand.

The concept of library is changing from 'library within wall' to 'library without wall', *i.e.* "Digital Library". Thus, in order to achieve the goal of establishing a "Electronic Library" in this digital era of Internet age using state-of-the-art Information Technology, the Library has successfully launched the web access to its catalogue. The newly designed webpage of "Online Public Access Catalogue" can be accessed right on the desktop through LAN in the Institute using the URL "http://opac/index.htm " for searching the database for Books, Journals & Serials available in the library and also for checking the account(s) status by entering the respective membership code.

In continuation to put a further step in the ongoing progress of library development a new add-on feature in this year has been incorporated and the web access to the Catalouge of VPCI Library has now been uploaded on the Delhi University Campus Wide Network since March 2004. The catalogue can be accessed using the URL " http://10.8.2.21 " by the users from within as well as outside the Institute (over Delhi University LAN), thus, enabling the users to search the holdings of VPCI Library. This Institute holds the privilege of being first of its kind in the Delhi University Network System to make the holdings of Library online. The OPAC not only ensured powerful search and query facilities due to minimal data entry requirements and maximum possible integration of modules, but also increases the efficiency of the library staff and better management control.

The Library facilities are available to Members/Users of Delhi University from Monday to Friday {8.30 A M to.7.00 P M}.

PUBLICATION DIVISION

The Publication Division of the Institute has been publishing a quarterly periodical, ***the Indian Journal of Chest Diseases and Allied Sciences,*** **<http://www.vpci.org.in/journals.asp>,** jointly with the National College of Chest Physicians (NCCP), India. The Journal was started in 1959 by (late) Prof. R. Viswanathan, Founder-Director of VPCI. It has a wide national and international circulation and is indexed in Index Medicus, Medline, etc.

Moreover, the Division is also responsible for documentation and dissemination of research output through Annual Reports and other publications of the Institute.

Dignitaries on the dias during the inauguration of the "3rd CME in Respiratory Diseases", 3-4 May 2003

DEPARTMENTAL ACTIVITIES

Biochemistry

Research

1. Acetoxy drug - Protein transacetylase: Physiological functions and opportunities for the drug development

The acetylation of proteins in biological system is largely catalyzed by specific acetyl transferases utilizing acetyl CoA as the acetyl donor. The non-enzymatic acetylation of cyclooxygenase protein by aspirin type of drugs is known. The enzymatic acetylation of the protein independent of acetyl CoA was not known until we discovered an unique membrane bound enzyme catalyzing the transfer of acetyl groups from polyphenolic per acetates (PA) to certain enzyme proteins resulting in the modulation of the catalytic activity. This enzyme was termed Acetoxy Drug: protein transacetylase since the acetoxy derivatives of several classes of polyphenols was found to be the acetyl group donating substrate. Our earlier studies firmly established that the liver microsomal cytochrome P-450, NADPH cytochrome c reductase and glutathione S- transferase were found to be the targets for TAase – catalyzed acetylation by the model acetoxy drug 7,8- Diacetoxy-4- Methyl coumarin (DAMC). NADPH cytochrome c reductase was found to be remarkably activated when tissue microsomes were incubated with DAMC. Since NADPH cytochrome c reductase forms a domain of Nitric Oxide Synthase (NOS) it was thought interesting to probe whether NOS could be activated by DAMC catalyzed by TAase. We examined this proposition using human platelets as the experimental system. The platelets preincubated with DAMC and L- Arginine exhibited significantly enhanced levels of NO compared to that of Arginine alone signifying the activation of platelet NOS. DAMC in the absence of Arginine has no effect NOS and 7,8 dihydroxy-4-methylcoumarin (DHMC) the deacetylated product of DAMC was ineffective in producing the activation of NOS. Also the activation of NOS produced by DAMC was abolished by L- NAME, the inhibitor of NOS. These observations confirmed the ability of acetoxy coumarins to enhance NO levels in human platelets. The studies were extended to examine the effect of acetoxy derivatives of other classes of polyphenols, *viz.* flavones, chromones and xanthones on platelet NOS. Various polyphenolic peracetates were effective in causing the activation of human platelet NOS in tune with their specificities to platelet TAase. Such an action of polyphenolic per acetate (PA) necessitated to investigate whether they can augment NO related physiological effect in platelets. Accordingly the influence of PA on ADP- induced platelet aggregation was examined. PA were indeed found to cause profound inhibition of platelet aggregation due ADP. Hence these investigations have clearly projected PA as the potent enhancers of intracellular NO. They also merit as the potential drug candidates that act by way of NO related pharmacological action.

2. Studies on mechanism of signal transduction during release of proinflammatory cytokines IL-1b and TNF-a by alveolar macrophages in asthma

Proinflammatory cytokines, interleukin -1b (IL-1b) and tumor necrosis factor-a (TNF-a), released by alveolar macrophages (AM) play a significant role in airway inflammation. We examined the kinetics of expression of IL-1b and TNF-a in AM of asthmatic patients *in vitro* induced by various stimuli, *viz.* lipopolysaccharide (LPS), phorbol myristate acetate (PMA), sphingosine and histamine. The expression at mRNA level was evaluated by gene specific RT- PCR. Bronchoalveolar lavage fluid was collected from 16 asthmatic patients and a healthy subject, AM prepared and incubated with 100nM of either of the drugs for varying time intervals. Our results show that in AM of asthmatics,

LPS induced expression of mRNA of IL-1b and TNF-a immediately (at 0 min) after addition of the drug. PMA and sphingosine induced expression of both at 10 min and 5 min respectively but histamine did not show any substantial expression of mRNA of these cytokines up to 30 minutes. The pattern markedly differed from that observed in the AM of healthy subject where no cytokine was expressed immediately. These results suggest that AM of asthmatic patients remain in an active state and the exposure to an endotoxin (LPS) or tumor promoter (PMA) may lead to immediate expression of IL-1b and TNF-a, which may initiate and perpetuate the airway inflammation in the disease. ***(Principal Investigator: Prof. S.K. Bansal, Co-investigator: Dr V.K. Vijayan)***

3. Expression of inducible NOS in peritoneal macrophages of rat

Nitric oxide (NO) plays an important role in immune responses, inflammation and antimicrobial defense. In vivo, it is produced by the action of nitric oxide synthase (NOS) on L-Arginine. NOS may be endothelial (eNOS), constitutive (cNOS) or inducible (iNOS). Inducible NOS is expressed in macrophages and other cell types after activation by immunological agents such as bacterial endotoxins, tumor promoters, etc. We incubated the rat peritoneal macrophages with various stimuli, *viz.* LPS, PMA, sphingosine and histamine and then assessed the expression of iNOS at mRNA level by doing gene specific reverse transcriptase-polymerase chain reaction (RT-PCR). The iNOS expression took place with 15 µg/ml LPS at 0 and10 minutes, with 100nM PMA at 20 and 25 minutes and with 100nM sphingosine at 0, 10 and 15 minutes. Histamine did not cause any expression of iNOS. ***(Principal Investigator: Prof. S.K. Bansal, Co-investigator: Dr V.K. Vijayan)***

Biostatistics

The Department provides statistical assistance in planning, designing, analyses and execution for the research work of various departments of the Institute. It also conducts regular teaching programmes for the Postgraduate students. Besides this, the Department also takes care of in- and out-patients' records.

Research

Continuation of the studies pertaining to (1) the correlation between nutritional status and incidence of airway disorders in adults and (2) seasonal pattern of various respiratory diseases among the patients attending the out-patient department (OPD) of the Institute.

Cardiorespiratory Physiology

Research

1. Effect of high dietary sodium intake and inhibition of sodium-potassium adenosine triphosphatase on induction of asthma in guinea pigs

The role of inhibition of sodium-potassium adenosine triphosphatase and high dietary sodium intake was studied in a guinea pig model of asthma. It was observed that administration of salt and digoxin to suppress the activity of sodium-potassium adenosine triphosphatase may enhance the response to allergen inhalation.

2. Role of oxidant-antioxidant imbalance in the pathogenesis of asthma and the role of vitamin E in its management

We investigated changes in a wide range of oxidants and antioxidants to bring out a comprehensive picture of oxidant-antioxidant imbalance. Increased oxidative stress was observed in asthma. The effect of addition of vitamin E to standard treatment of asthma was also investigated. Vitamin E when added to standard therapy in asthma has shown a beneficial effect.

3. Role of oxidant-antioxidant imbalance in the pathogenesis of bronchial hyperreactivity in guinea pigs

In vivo generation of reactive oxygen species in the airways by inhalation of xanthine and xanthine oxidase was shown to increase bronchial reactivity to inhaled histamine 30 minutes later. This was accompanied with alterations in several cellular and extracellular antioxidants. These observations show that increased oxidative stress may play an important role in the pathogenesis of bronchial hyperreactivity.

4. Development and validation of a questionnaire to measure clinical control of asthma based on current management guidelines

An Asthma Control Questionnaire was developed based on current management guidelines. Its properties were tested in asthmatics attending the outpatient clinic at the Institute. Forty subjects have been studied so far. The control was assessed at baseline and then again at 2 weeks and 4 weeks. This instrument will enable a better evaluation of therapy in a standardized manner and thus improve the quality of treatment.

5. Validation of a specific quality of life instrument for Indian patients with bronchial asthma

Junipers' Asthma Quality of Life questionnaire may be difficult to apply in Indian patients due to cultural, educational and economic differences. An Asthma Quality of Life Questionnaire for Indian patients was therefore developed and a study started to test its measurement properties. Thirty patients have been studied so far.

6. Potentiation of allergic asthma by air pollution: The ozone-allergen interaction and its modulation by dietary antioxidants, alpha-tocopherol and ascorbic acid

Given the fact that ozone acts through the generation of reactive oxygen species in the airways

and that these are increasingly being recognized as important participants in the inflammatory reaction in asthma, ozone-allergen interaction may be synergistic and facilitate the induction of asthma. A study has been started to investigate this hypothesis in a guinea-pig model in which allergen-induced asthma is being developed in association with a daily exposure to ambient concentrations of ozone. Work is in progress. A successful model of allergen induced asthma in guinea pigs was developed. Increased oxidative stress was shown in these animals. Preliminary data suggests that ozone may increase the inflammatory response in the airways in this model of asthma.

Clinical Biochemistry

The diagnostic services details provided to the indoor and outdoor patients for processing 109 clinical samples are given below:

Nature of Investigation	***No. of Clinical Samples***
24 hour urine calcium	25
24 hour urine protein	11
Pleural fluid protein	29
Pleural fluid sugar	29
Ascitic fluid protein	04
Ascitic fluid sugar	04
Others	07
Total	**109**

Medical Mycology

Research

1. Some novel and unusual fungal pathogens

Emericella quadrilineata was isolated for the first time as an etiological agent of onychomycosis. Also the yeasts, *Rhdotorula mucilaginosa* and *Trichosporon mucoides* were recovered for the first time as causal agents of lymphadenitis in an HIV-infected patient, and urinary tract infection in a diabetic patient respectively. *Cladosporium oxysporum, Alternaria alternata* and *Phaeoacremonum inflatipes,* rarely known fungal pathogens were recovered as etiological agents of one case each of cutaneous phaeohyphomycosis respectively.

2. Epidemiology and aspects of immunodiagnosis of *Penicilliosis marneffei*

Penicillium marneffei was recovered from the internal organs of 10 (9.1%) out of 110 bamboo rats (*Cannomys badius*) examined from Manipur State, an area endemic for *Penicilliosis marneffei* in India. Identification of the isolates was based on a detailed study of their morphological characteristics, *in vitro* conversion to fission yeast form and exoantigen tests. Histopathological examination of lungs, liver and spleen of 15 of the rats including five of the positive animals examined did not reveal any fungal elements. The present study establishes the bamboo rat *Cannomys badius* as a natural host of *P. marneffei* in India. None of the 72 rats of other species, viz. *Rattus noervegicus*, *R. rattus*, *R. niditus*, *Bandicota bengalensis* and *Mus musculus* trapped from bamboo plantations in Guwahati, Bara Pani-Umeam, Shillong, Imphal, and Sikkim yielded any isolation of *P. marneffei*. Multilocus Microsatellite Typing (MLMT) of the isolates of *P. marneffei* done with the collaboration of Prof. N. Vanittanakom, Department of Microbiology, Faculty of Medicine, Chiang Mai University, Chiang Mai, Thailand, and Dr M. Fisher, Faculty of Medicine, Imperial College, London, England revealed five genotypes. One of these genotypes was identical to that seen in a human isolate suggesting that either co-infection from a common source or host-to-host transmission had occurred. A detailed study of the physiological characteristics of the isolates of *P. marneffei* demonstrated utilization of a variety of carbon sources for growth. There were some variations in the B-galactosidase activity. All the isolates tolerated 5% glycerol and 5% sodium chloride in the growth medium. The demonstration of marked proteinase in all the 10 isolates is a significant observation, as proteinase is known to be one of the virulent factors in pathogenic fungi. All the isolates of *P. marneffei* converted to fission yeast form on 2% garden pea (*Pisum sativum*) agar and Horse gram (black gram) (*Cicer aeritinum*) agar though conversion was generally slower, and also the proportion of separated yeast cells was smaller than that on brain heart infusion (BHI) agar. These seed-based media could serve as alternative media for *in vitro* conversion of *P. marneffei* isolates in laboratories, where brain heart infusion agar is not available. The pathogenicity of two representative bamboo rat isolates of *P. marneffei* for laboratory mice was established. In experimental infections, the lesions in the internal organs of cortisone-treated mice were much more extensive than those in the normal (untreated) mice. In the *in vitro* susceptibility tests to different antimycotics, the minimum inhibitory concentration (MIC) for both itraconazole and voriconazole was 0.03 µg/ml for six rat isolates and for one human isolate. The remaining one rat isolate showed higher MIC, *i.e.* 0.5 µg/ml and 0.25 µg for the two antimycotics respectively. The second human isolate required a MIC of 0.125 µg/ml for these two antimycotics. The MIC for

amphotericin B ranged 0.03 – 0.25 µg/ml for the rat isolates, and it was 0.03 µg/ml and 0.125 µg/ml respectively for the two human isolates. All the tested isolates were resistant to fluconazole.

None of the 25 soil samples collected from the burrows of *C. badius*, and 10 samples each of bamboo shoots and leaves in Manipur, yielded any *P. marneffei* isolate. Additional 190 soil samples collected from burrows of other species of rats and from sites other than the burrows of rats in bamboo plantations in northeastern States, and other parts of India, and from Nepal were also negative for the fungus. Experimental work on the survival of *P. marneffei* in soil showed that the fungus could survive in sterile soil for several weeks with little possibility of multiplication but not in non-sterile (natural) soil. Thus, definite evidence of natural occurrence of *P. marneffei* in soil is lacking. Experiments on *in vitro* interaction of several species of saprobic fungi, viz. *Aspergillus fumigatus*, *A. flavus*, *Acremonium strictum*, *Penicillium purpurogenum,* and *Fusarium solani*, and *Penicillium* sp. with *P. marneffei*, employing different techniques demonstrated that these fungi in general are antagonistic to or inhibit the growth of *P. marneffei*. This observation may account for the rare occurrence of *P. marneffei* in soil under particular ecological conditions.

A simple procedure for preparation of potent antigen of *P. marneffei* was developed. This essentially comprised dialysis of the cultural filtrate of the yeast/mold form of the fungus, its repeated precipitation with ammonium sulphate and re-dialysis. The immunodiffusion procedure for detection of antibodies to *P. marneffei* was standardized with rabbit antisera and with serum samples of mycologically proven cases of *Penicilliosis marneffei*. This holds promise for a simple immunodiagnostic procedure for diagnosis of human infections due to *P. marneffei*.

Diagnostic Services

A total of 827 clinical samples from indoor and outdoor patients were processed during the year, as per details given below:

a.	***Fungal Culture***	***No.***
	Sputum	270
	BAL/ bronchial aspirate/pleural fluid	129
	Nail 11	
	Skin/nasal tissue	21
	Miscellaneous	25
b.	***Blood Precipitation Test***	382
	Total	**827**

Microbiology

Research

1. Biochemical and molecular characterization of clinical isolates of *Corynebacterium diphtheriae*

A total of 50 clinical isolates of *C.diphtheriae* isolates recovered from suspected cases of diphtheria admitted to the Infectious Diseases Hospital, Kingsway Camp, Delhi and 10 isolates, 5 each recovered from American and Russian patients respectively procured from CDC, Atlanta, U.S.A were studied. All these isolates were biotyped using conventional as well as commercially available API Coryne(BioMereux, France). Toxigenicity testing was done by Elek immunoprecipitation and PCR assay. As many as 45 isolates were *var intermedius*, 11 were *var mitis* and rest 4 were *var gravis*. There was 100% correlation between Elek test and PCR assay except in one isolate obtained from CDC, Atlanta, which was Elek negative and PCR positive. A comparative evaluation of whole-cell protein profile analysis by SDS-PAGE (PPA) and ribotyping with a digoxigenein labelled c-DNA probe complementary to 16S and 23S rRNA of Escherichia coli was undertaken. The protein and ribotype patterns were subjected to computerized numerical analysis in order to have an objective comparison between the techniques employed. PPA could type the isolates into 16 types; ribotyping on the other hand identified 35 ribotypes. SD1 was the most predominant protein type containing 20 strains. Protein types SD2 and SD4 contained a cluster of 8 strains each which were further divided into 7 and 4 different ribotypes respectively. Similarly, protein type SD6 and SD11 contained a cluster of 2 strains each which could be further ascribed to unique ribotypes. Both the techniques had 100% typeability and 100% reproducibility. Ribotyping was found to have a higher discriminatory index (0.96) than PPA (0.85). Ribotyping was able to discriminate between strains, which were clustered by SDS-PAGE.

2. Analysis of isoniazid and rifampicin resistance mutations in the clinical isolates of *M. tuberculosis* by sequencing and dot-blot hybridization

Twenty patients of pulmonary tuberculosis, attending the Department of Respiratory Medicine, V.P. Chest Institute, Delhi and 100 patients from RBTB Hospital, Kingsway Camp, Delhi have been taken up for the study till date. The patients were asked to submit sputum samples for three consecutive days. Ziehl-Neelsen staining was performed for direct smear examination, which was positive in 90 (70%) cases. Cultures for *M. tuberculosis* were routinely performed for every case. Modified Petroff's method was used for decontaminating the sputum samples and Lowenstein-Jensen medium in duplicate was used for culture. Susceptibility tests of 19 isolates of *M. tuberculosis* selected at random were performed by the proportion method. Susceptibility testing of seven isolates was carried out by BACTEC 460 TB system.

In the current experiments we could detect multidrug resistance in 23% (6/26) of the isolates. In all, 7/26 (27 %) isolates were resistant to isoniazid, 6/26 (23 %) to rifampicin, 8/26 (31 %) to streptomycin and 4/26 (15 %) to ethambutol.

Five probes (A, B, C, D and E), each capable of binding to a different target segment within the rpoB core region of the wild type *M. tuberculosis* genome were used. The absence of hybridization of any probe in the dot-blot assay indicated the presence of mutations.

The assay was initially carried out on 11 isolates with probe E as this probe covers codons 528 to 533, which is the site with the maximum number of reported mutations leading to rifampicin resistance. Of the four resistant isolates tested, two of the isolates hybridized with probe E. The results were confirmed by sequencing when a mutation was detected in both these isolates at codon 531, covered by probe E. ***[Principal Investigator: Prof. M. Bose, Co-investigators: Dr M. Varma, Dr V.K. Vijayan, (VPCI) and Dr S. Patnaik, Dr J.N. Banvalikar, R.B.T.B. Hospital, Delhi]***

3. Mycobacterial-epithelial interaction in innate immune response to tuberculosis and its role in transcriptional regulation of inducible nitric oxide synthase (iNOS)

In view of the presence of a large number of epithelial cells in the alveoli of the lung and their ability to produce various cytokines and chemokines, the possible role of the alveolar epithelial cells in innate immune response to tuberculosis was examined. Human alveolar epithelial cell line A549 was used as a model. The ability of A549 cells to induce nitric oxide (NO) in response to *Mycobacterium tuberculosis* infection was taken as an *in vitro* correlate of innate immunity. *M. tuberculosis* infection induced A549 cells to produce significant level of NO and to express inducible nitric oxide synthase mRNA at 48 hr of infection. However, the amount of NO released at this point was not mycobactericidal. Cytokine stimulation (interferon-γ, tumor necrosis factor-α, interlukin-1β, alone or in combination) of the infected A549 cells induced higher concentration of NO. The study of colony forming units (CFU) as a measure of mycobactericidal capacity of A549 cells revealed a reduction in CFU of *M. tuberculosis* by 39.29 percent. Interestingly γ– irradiated *M. tuberculosis* H37Rv could also elaborate higher than basal level of NO. Therefore, we examined mycobacterial antigenic components for their possible role in NO production. We observed that A549 cells produced significantly higher amount of NO at 48 hr when treated with mycobacterial whole cell lysate, cell wall or cell membrane preparation. The release of NO and resultant mycobactericidal activity could be further enhanced by simultaneously conditioning the *M. tuberculosis* infected A549 cells with cytokine and mycobacterial components. These results suggest that the alveolar epithelial cells respond to their microenvironment, which is constituted by various cytokines, and macrophages processed antigens and may contribute to the innate immune response to tuberculosis. ***(Principal Investigator: Prof. M. Bose, Co-investigator: Dr Sadhna Sharma)***

4. Analysis of polymorphism and expression profile of genes of mammalian cell entry *(mce)* operons in clinical isolates of *M. tuberculosis*

Mammalian cell entry operons (mce operons), implicated in the entry of mycobacteria into host cells are present both in pathogenic species as well as saprophytic species. Thus, it is likely that the genes in these operons have functions other than those required for entry into host cells. By *in silico* analysis we have identified domains within the mce operons that might justify their occurrence in a saprophytic species like *M. smegmatis*. Our analysis deciphered the presence of Ttg2B, and Ttg2C domains characteristic of transporter proteins in addition to mce domain in these operons across the various species of mycobacteria. We have also analysed and compared the expression profile of mce operons in *M. tuberculosis, M. bovis,* and *M. smegmatis* under different growth conditions. In *M. smegmatis* each operon has truncation of domains in at least one gene. We observe differential expression of the operons in *M. smegmatis* growing under different culture conditions. In the bacilli growing in nutritionally rich medium with aeration; only mce 4 operon is expressed while during stationary phase in a standing culture all the four operons are expressed. In *M. bovis* in addition to the complete absence of mce 3 operon several domains

within putative proteins encoded by the other operons are truncated. We detect the expression of mce 2 operon in the exponential phase of growth while mce 2 operon along with mce 1 operon is expressed in the stationary phase. ***(Principal Investigator: Prof. Vani Brahmachari, ACBR Centre, University of Delhi, Co-investigator: Prof. M. Bose)***

5. PCR and RFLP typing of the Indian M. avium strains using IS1245 insertion sequence marker

Sixty-five biochemically identified MAC isolates were used in the present study. In addition to biochemical tests, the isolates were subjected to investigation for the presence of molecular markers described for *M. avium* and *M. intracellulare,* namely, IS1245 insertion sequence, *mig,* DT1, DT6 sequence markers. It was observed that all the 65 isolates were IS1245 and *mig* positive by PCR and 47 out of 65 were DT1/DT6 positive.

Three PRA methods described for identification of mycobacterium species were also applied to these isolates. Our results demonstrate that although these PRA methods offer several advantages (rapid, economical and theoretically applicable to all species of mycobacteria), the MAC isolates recovered from Delhi patients demonstrated heterogeneous profile. We conclude that further work will be needed to establish PRA as an useful identification tool for MAC.

The PCR typing was observed to be rapid and simple. This typing system provided reproducible and easy to analyze patterns comprising fewer than 10 bands. Despite the fact that both typing methods failed to type some strains (10 by RFLP and 8 by PCR, of 65 strains) none of the isolates were negative for both the typing methods. On PCR typing a cluster of 14 isolates with identical three banded pattern was observed and within this cluster were 5 isolates that were negative for IS1245 RFLP typing.

6. Infection of human monocyte derived macrophages with *M. tuberculosis* induces apoptosis of T cells: A potential mechanism for persistent infection

Mycobacterium tuberculosis is an intracellular pathogen that readily survives and replicates in human macrophages. Host cells have developed various mycobactericidal and immunoregulatory mechanisms, such as the production of nitric oxide and inflammatory cytokines to control intracellular replication of *M. tuberculosis*. Inducible nitric oxide synthase (iNOS) is transcriptionally under the control of IFN-γ and TNF-α. IL-12 provides a crucial link between activated mononuclear phagocytes and T cells by regulating the production of IFN-γ. In this study, we investigated the production of nitric oxide (NO), TNF-α, and IL-12 by the peripheral blood monocytes (PB Mn) of patients suffering from multidrug-resistant tuberculosis (MDR-TB). The cells were infected with *M. tuberculosis* and stimulated with IFN-γ or activated with mycobacterial subcellular components. The results were compared with those from cases of newly diagnosed TB and healthy controls. Nitric oxide production was significantly depressed in PB Mn from MDR-TB patients. Infected monocytes from the newly diagnosed TB patients produced significantly higher levels of NO as compared to those from MDR-TB patients or normal controls. The subcellular fraction of *M. tuberculosis*-like whole cell lysate (WCL), culture filtrate protein (CFP) and lipoarabinomannan (LAM) induced higher concentrations of NO release in PB Mn from newly diagnosed TB patients as compared to those from MDR-TB patients. Cell culture supernatant from PB Mn assayed at 48 hr after infection or stimulation demonstrated significantly depressed release of TNF-α and IL-12 from MDR-TB cases as compared to the fresh cases. We observed a definite correlation between nitric oxide release and TNF-α

production irrespective of low or high production in MDR-TB or fresh cases respectively. The present data suggest that peripheral blood monocytes of MDR-TB patients typically show signs of immunosupression. Whether such immunosupression is the cause or effect of MDR-TB merits further investigations.

7. Molecular characterization of *Pseudomonas* isolates from the hospital patients and other hospital sources

There was an outbreak of Pseudomonas infection at the ICU of VPCI. During the investigation of the outbreak, in order to delineate the source, various samples from the patient, the suction apparatus, endotracheal tube and other samples from the ward were processed. Strains of Pseudomonas isolated from these samples were taken for characterization. The DNA was isolated by the classical Phenol-chloroform method. The characterization by ribotyping is under way.

8. Prevalence of *Mycoplasma pneumonia* infection in patients of acute exacerbation of chronic obstructive pulmonary disease

Eight patients of acute exacerbation of COPD attending the Department of Respiratory Medicine at V.P. Chest Institute, Delhi were taken up for the study. Throat swabs and sputum samples were collected from the patients for culture and PCR. Sera were collected for serological diagnosis of *M. pneumoniae* infection, from the patients as well as seven healthy controls. Samples were cultured on PPLO medium and incubated at 37 °C. A part of the sample was stored at –70 °C to be used for PCR. Three of the samples showing evidence of growth were subcultured on to PPLO agar and taken up for PCR. PCR was standardized in the lab using a primer set amplifying a 375 bp region of the P1 gene. PCR was then conducted on all samples including two follow-up cases. None of the clinical samples studied showed the desired amplicon in the direct PCR assay. PCR performed on the three samples with probable growth of *Mycoplasma pneumoniae* was also negative.

The sera obtained from patients were taken up for serological studies. None of the samples had a positive IgM assay. However, IgG antibodies were detected in four samples. Only one of the IgG positive samples had a positive Gelatin Particle agglutination assay too. One of the samples (MP1) was positive for IgG antibodies with a GPA titer of 1:80. We found evidence of *Mycoplasma pneumoniae* infection in atleast one patient of acute exacerbation of COPD who tested positive for IgG antibodies and GPA both. However, IgM antibodies were negative in this case. ***[Principal Investigator: Dr M. Varma, Co-investigators: Prof. S.K. Chhabra (VPCI), Dr Rama Choudhary, AIIMS, New Delhi]***

Diagnostic Services

Details of diagnostic services provided to the indoor and outdoor patients are given below:

i. Bacteriology Laboratory

Clinical specimens processed for isolation of aerobic pathogens

Nature of Specimen	***No.***
Sputum	1541
Pleural fluid	30
Bronchoalveolar lavage	34
Bronchial aspirate	92
Postbronchial sputum	11
FNAC	05
Pus	01
Ascitic fluid	01
Urine	176
Blood	17
Endotracheal secretion	08
Throat swab	07
Tracheal aspirate	07
Catheter tip	04
Total	**1934**

The specimens yielded 265 isolates of *Pseudomonas aeruginosa*, 18 *Klebsiella oxytoca*, 16 *Enterobacter* spp., 59 *Acinetobacter* spp., 12 *S. aureus*, 6 *Citrobacter koseri,* 47 *E. coli,* 24 *H. influenzae* and 91 isolates of *Streptococcus pneumoniae*. A large number of these isolates were resistant to multiple antibiotics. None of the *H. influenzae* and *S. pneumoniae* showed resistance to any of the antibiotics.

ii. Mycobacteriology Laboratory

a. Clinical specimens processed

Nature of Specimen	***No.***
Sputum	5664
Pleural fluid	48
Bronchoalveolar lavage	61
Bronchial aspirate	109
Postbronchial wash	94
FNAC	13
Endotracheal aspirate	01
Pus	03
Lymph node biopsy	01
Ascitic fluid	02
Urine	02
Total	**5998**

b. Clinical specimens processed with BACTEC 460 TB system

Nature of Specimen	***No.***
Sputum	53
Pleural fluid	07
Bronchoalveolar lavage	03
Pus	02
FNAC	01
Bone marrow aspirate	01
Endometrial biopsy	01
Total	**68**

Pathology

Diagnostic Work

Details of the diagnostic services provided to the indoor and outdoor patients during the year are given below:

a. Hematology		**No.**
Total no. of blood samples examined	:	9895
Hemoglobin estimation	:	9765
Total leukocyte count	:	9765
RBC count	:	4420
Differential leukocyte count	:	9765
ESR (Westergren)	:	9705
Reticulocyte count	:	545
Absolute eosinophil count	:	1185
Mean corpuscular volume (MCV)	:	5135
Mean corpuscular hemoglobin (MCH)	:	5135
Mean corpuscular hemoglobin concentration (MCHC)	:	5135
Hematocrit	:	4420
Platelet count	:	2280
Peripheral smear for red cell morphology	:	580
Malarial parasite examination	:	455
Bleeding time	:	1090
Clotting time	:	1090
b. Clinical Pathology		
Urine examination	:	7200
Albumin	:	7200
Sugar	:	7200
Bile pigments	:	170
Bile salts	:	170
Urobilinogen	:	170
Microscopic examination	:	7200

c. Cytology

Sputum	:	77
BAL fluid	:	95
FNAC	:	65
Bronchial aspirate	:	21
Pleural fluid	:	39
Bronchial brushings	:	02
Ascitic fluid	:	05
Miscellaneous	:	02

d. Clinical Chemistry

S. cholesterol	:	224
Glucose	:	2114
B. Urea	:	1072
S. creatinine	:	1093
S. total proteins	:	564
S. albumin	:	549
S. total bilirubin	:	723
S. direct bilirubin	:	717
SGOT	:	773
SGPT	:	771
S. alk. phosphatase	:	750
S. calcium	:	56
S. uric acid	:	25
S. triglycerides	:	169
S. HDL	:	155
S. phosphorus	:	13
S. magnesium	:	05
CK-MB	:	10

e. Histopathology

Diagnostic surgical biopsies	:	19
Experimental biopsies	:	143

Pharmacology

Research

1. Clinical study on the possible hepatoprotective effect of New Livfit (a polyherbal preparation) on ATT-induced hepatotoxicity

Anti-tubercular therapy (ATT) induces hepatotoxicity and several strategies have been designed to protect against this drug-induced toxicity. The present study was an attempt to evaluate the possible hepatoprotective effect of a new polyherbal preparation (New Livfit) against ATT in TB patients. The study was carried out in collaboration with RBTB Hospital, Delhi. After obtaining the ethical clearance for the study, informed consent was taken from the patients in the prescribed format. The study was a randomized, open, placebo controlled clinical trial with a parallel design. All patients received ATT—intensive four–drug therapy (RHEZ) for two months, followed by continuation phase two-drug therapy (RH) for four months. After initial baseline biochemical data for liver function (Bilirubin, SGOT, SGPT, Alkaline Phosphatase, Serum Proteins) and screening for HbsAg and HIV, the patients were put on ATT. The treatment group received New Livfit, whereas, the placebo control group received Vit. B Complex. The patients were assessed for LFT four weeks, eight weeks and 24 weeks after ATT therapy, in consultation with RBTB Hospital, Delhi. The study (for 100 patients) has been completed and on analysis of the data interesting observations have emerged. Briefly, out of patients diagnosed with ATT-induced hepatotoxicity, prior treatment with New Livfit showed protective effects, as compared to Vit. B Complex group.

2. A multicentric, double-blind randomized placebo controlled study evaluating the efficacy and tolerability of the polyherbal preparation LL-2123 HP against hepatotoxicity in patients with pulmonary tuberculosis

A clinical study was carried out on 30 patients of pulmonary tuberculosis to evaluate the protective effect of the polyherbal preparation LL-2123 HP against ATT-induced hepatotoxicity. Ethical clearance was obtained from the appropriate committee, as was written informed consent from the patients. Subjects were included taking into consideration the prescribed inclusion and exclusion criteria and the control and experimental drugs (coded by the sponsors) was administered following the randomization table. Baseline biochemical investigations were performed prior to starting ATT, in both groups of patients, who were again evaluated after eight weeks of intensive phase therapy.

3. Possible protective role of Livina (a polyherbal preparation) against anti-tubercular therapy (ATT)-induced hepatotoxicity

This is a single blind, randomized, placebo controlled study (to be carried out in 60 patients) to evaluate the efficacy of Livina against ATT-induced liver damage during intensive phase chemotherapy. After obtaining the necessary ethical clearance and informed consent from the subjects, patients of pulmonary tuberculosis were screened according to the inclusion/exclusion criteria, and included in the study. The recruitment process is on and 20 patients have been recruited to date. After baseline biochemical investigations for liver functions, ATT was started, and blood samples will be collected at intervals of four weeks, to assess the comparative extent of hepatotoxicity in both placebo and Livina treated groups.

4. Studies on the possible role of nitric oxide in the regulation of neurobehavioural and immunological responses during stress

Nitric oxide (NO) is now recognized as an important bioregulatory molecule and its importance in several inflammatory, immunological and respiratory diseases is well recognized. Immunocompromised situations enhance the susceptibility to disease and there is a clear correlation between neural pathways, immunity and somatic/visceral disorders. Stress is known to induce complex neural interactions and also modulate immune functions. The present study evaluated the possible role of NO in the neural modulation of immunity and some related responses in experimental animals. Stress induced suppression of different aspects behaviour and immune function (humoral and cell-mediated) and these effects were stressor intensity dependent. Nitric oxide modulators like precursors (L-Arginine) and synthesis inhibitors (L-NAME, 7-NI) influenced specific immunity in a complex manner and these correlated with nitrite/nitrate levels in the plasma and the brain. Additional studies showed that repeated stress exposure induced a degree of behavioural adaptation/tolerance in rats, and these effects were well correlated with corresponding fluctuations in brain nitrate/nitrite levels. Both changes in acutely and repeatedly stressed animals were associated with reduced brain NO metabolites, and precursor studies with L-Arginine confirmed these findings. NO also regulated humoral and cell-mediated immune responses during stress, and L-Arginine and L-NAME showed opposite effects on these parameters. Behavioural factors were also good predictors of the stress-induced immunomodulation and its regulation by NO. Interestingly, NO exerted a protective effect against stress-induced immune suppression and this could have an impact on several psychosomatic disorders including those involving the respiratory tract and allied systems. Similar protective effects of NO were seen on the gastric mucosa during stress, and L-Arginine and L-NAME produced opposite effects on cold restraint stress induced gastric ulceration in rats.

5. Studies on the possible role of pro-oxidant/anti-oxidant balance in theophylline toxicity

Theophylline is now emerging as an important adjunct to therapy in bronchial asthma because of some newly discovered pharmacological effects. The anti-inflammatory and immunomodulatory effects of the drug are now known, but a safer toxicity profile could make its use more acceptable. Its close relationship with free radicals (ROS and RNS) is shown in its chemical/pharmacological effects, and the present study was designed to evaluate the role of free radicals in theophylline toxicity. The study evaluated theophylline induced convulsions and correlated with the anti-oxidant/ pro-oxidant status in the brain. Modulation of these effects with anti-oxidants were seen and melatonin was particularly effective in this regard. Combination of melatonin with NO synthase inhibitors had a greater effect than melatonin alone. These efffects were true for both convulsiogenic and pro-convulsant effects of theophylline. Studies in respect of theophylline, anti-oxidants and brain antioxidant status are currently in progress. Anticonvulsant effects were also seen with the NO synthase inhibitor, L-NAME and 7-nitroindazole, and melatonin synergized with the NO synthase inhibitor effects.

6. Experimental studies on the role of free radicals in emotional and environmental stress

The effects of emotional and environmental (xenobiotic) stressors on immune regulation and its modulation by free radicals are being studied. Pharmacological and biochemical data have showed that lipid peroxidation is associated with stress induced immunomodulation and anti-oxidants reverse this. Behavioural studies have shown a close correlation between behavioural patterns and immune responses.

7. Regulatory role of nitric oxide in the possible association between smoking and pulmonary tuberculosis

The rate of occurrence of pulmonary tuberculosis in smokers and non-smokers were studied and several variables like age, sex, socio-economic status, intensity, duration and type of smoking were assessed. A close correlation was found between the various above mentioned factors and the incidence of pulmonary tuberculosis. Further, the levels of NO metabolites in these patients were evaluated before and after ATT, and it was observed that nitrite (NO2) levels were higher in pre-ATT pulmonary tuberculosis patients, which were lowered after two months of intensive ATT with 4-drug regimen (RHZE). This is an interesting finding and indicates a possible correlation between pulmonary tuberculosis, smoking and NO. It is planned to extend this study to compare NO levels in normal smokers and non-smokers, and also smokers and non-smokers with other commonly encountered respiratory disorders.

Physiology

Research

1. Effect of simulated high altitude exposure on airway smooth muscle activity

To evaluate the direct effect of hypoxia on airway smooth muscle in tracheal rings of guinea pig with intact-epithelium and denuded epithelium, experiments were carried out on isolated tracheal ring segments in organ bath set-up.

The tissues were precontracted with either 5 x 10^{-6} M acetylcholine or 40 mM potassium chloride. Cumulative concentration-response curves for histamine, 5-hydroxytryptamine, the known bronchoconstrictors and isoproterenol a bronchodilator were obtained before and during exposure of the tissues to hypoxia. Decrease in oxygen concentration from 95% to 10% in the organ bath solution produced an immediate relaxation of airway smooth muscles. Hypoxia inhibited the contractile response of acetylcholine and the inhibition of acetylcholine response was more in epithelium-denuded rings. Hypoxia attenuated the contractile response of histamine and there was no significant shift in the concentration-response curve of histamine in both epithelium-intact and denuded rings. Hypoxia caused a rightward shift in the concentration-response curves of 5-hydroxytraptamine in both epithelium-intact and –denuded rings. The sensitivity of the epithelium–intact and –denuded rings to isoproterenol was enhanced by hypoxia.

The study is continued for investigating the effect of combined stress of cooling and hypoxia on the airway smooth muscle activity.

2. Cardiovascular responses to severe cold and hypoxia in man

The autonomic nervous system plays a vital role in the regulation of cardiovascular functions. The contribution of autonomic nervous system in the neural regulation of cardiovascular function during combined effect of cold and hypoxia was studied in man. The effect of cold and hypoxia on the sympathetic and parasympathetic activity was examined by heart rate and blood pressure response to postural changes, deep breathing response, valsalva manoeuvre, hand grip response, cold pressor response, urinary catecholamine levels. To analyse beat to beat heart rate variations heart rate variability spectrum was obtained using Fast Fourier Transform analysis. Beat to beat autonomic control of cardiovascular system by sympathetic and parasympathetic outflow was quantified by the heart rate variability spectrum in specific frequency bands; the low frequency (0.05-0.15 Hz) component indicative of sympathetic activity and high frequency (0.15-0.50 Hz) of vagal restrain. A significant rise in heart rate, blood pressure, oral temperature, low frequency activity, high frequency to low frequency ratio, systolic blood pressure response to hand grip test, norepinephrine and a fall in skin temperature, high frequency activity was observed when sea level residents were brought to high altitude (3500 M), suggesting hyperactivity of the sympathetic nervous system immediately on arrival at high altitude. This hyperactivity was maintained even after one year of acclimatization though there was a trend of recovery in autonomic balance by that time.

3. Effect of lead exposure on dopamine receptor mediated changes in behavior and mechanism of action of lead on vascular smooth muscle response in rats

The effect of acute exposure of lead on the vascular smooth muscle activity was investigated. Further to evaluate the role of dopaminergic and α-adrenoceptor in lead induced changes in the

aortic smooth muscle activity specific agonists and antagonists of dopamine and α-adrenoceptor were used.

Different concentrations of α_1-adrenoceptor agonist phenylephrine, α_2-adrenoceptor agonist clonidine, dopamine and lead acetate produced contractions in aortic smooth muscle. Combination of lead with dopamine did not show any potentiation of the contractile response when compared with dopamine alone. Similarly, combination of lead with phenylephrine or clonidine did not show potentiation of the response when compared with response of phenylephrine alone. However, prazosin- α_1-adrenoceptor antagonist, johimbine- α_2 receptor antagonist and SCH 23390 – dopamine receptor antagonist decreased the contractile response of lead, which suggests that adrenergic and dopaminergic receptor mechanisms may be involved in the vascular effect of lead or at least a common second messenger mechanism could mediate lead and dopaminergic responses.

4. Cardiovascular functions on exposure to arsenic in rats

The experimental animals (Wistar rats) were exposed to three different concentrations (25, 50 and 60 g/ml water) of arsenic in drinking water. The animals of acute group were given arsenic for 1-2 days and chronic exposure group for 2-6 months. Besides evaluating changes in the blood pressure, heart rate and baroreflex sensitivity in intact animals, investigation experiments on the vascular effects of arsenic exposure were also performed on isolated aortic vascular rings in organ bath set-up. In order to find out the role of endothelium dependent mechanisms, observations were made on the vascular smooth muscle preparation after incubation with NO- synthase inhibitor-L-NAME, inhibitor of hyperpolarizing factor - glibenclamide or prostacyclin inhibitor-indomethacin.

5. Effect of morphine on neural regulation of blood pressure and behaviour in animals

In order to explore the mechanism of action of epidural morphine on the neural regulation of blood pressure through arterial baroreceptors, the baroreflex response was examined before and after treatment of the animal with beta-blocker – propranol or parasympathetic blocker – atropine. Inhibitition of baroreflex response by epidural morphine which could be partially blocked by propranol or atropine suggests the modulation of sympathetic and parasympathetic nerve activity by epidural morphine thereby inhibiting the arterial baroreceptor mediated regulation of blood pressure.

6. Arterial baroreflex response during experimentally induced hyperlipidemia in rabbits

The arterial baroreflex functions as a short-term negative feed back regulation of arterial pressure. Baroreflex sensitivity is altered in vascular diseases, e.g. hypertension, atherosclerosis. In this study, baroreceptor mediated reflex regulation of blood pressure was studied in normal and hypercholestrolemic animals. Influence of cholesterol reducing agent and a herbal compound (Lipotab) on the baroreflex response in normal and cholesterolemic animals was also examined. In hypercholesterolemia, bradycardia response to hypertension was increased and tachycardia response to fall in blood pressure remained unchanged. High blood cholesterol level is generally associated with hypertension and in clinical practice beta-blockers and calcium channel blockers are generally used to treat the patients. Effect of propronolol, a beta-blocker and diltiazem, a calcium channel blocker on the baroreflex sensitivity in hypercholestrolemic animals was examined. Propronolol and diltiazem did not produce any significant effect on the baroreflex sensitivity.

7. Mechanism of action of estrogen on hemodynamic parameters in rabbits

The effect of estrogen (17 β-estradiol) on the cardiovascular performance before and after the blockade of left anterior descending coronary artery was studied in anesthetized, thoracotomised positive pressure ventilated rabbits.

The probable mechanism of action of estrogen was elucidated by observing the effect of estrogen before and after injecting various blockers such as atropine, propranolol and nifedipine. The effect of estrogen was also observed on isolated aortic rings in presence of various blockers to understand its mechanism of action on vasculature.

8. Bronchial reactivity in diabetic guinea pigs

Recent studies have shown that asthma in diabetic people is rare. However, coexistence of these two diseases has also been reported in a small number of patients. Data regarding the mechanism involved in the genesis of these pathological conditions together is scarce. In this context the present study was undertaken to investigate the responsiveness of airway smooth muscle, with or without epithelium, to certain bronchoactive agents in animal models of diabetics and diabetes with hyper reactive airways.

Experiments on isolated tracheal ring segments have been conducted in control animals and responsiveness of airway smooth muscle to certain bronchoactive agents was examined. Recently, similar response studies have also been started on experimentally produced diabetic animal model.

9. Neural and cardiovascular responses during epilepsy in conscious animals

In the present study the changes in cardiovascular system during epilepsy and after treatment with antiepileptic drugs and calcium channel blockers were studied in conscious animals. Telemetric technique was used for recording the haemodynamic variables during epileptic seizures in conscious animals. Telemetry provides a number of advantages over conventional methods for monitoring blood pressure (BP), heart rate (HR) and other biopotentials from conscious freely moving animals. This procedure eliminates the stress caused by restrain and need of anesthesia during measurement. Moreover, haemodynamic measurements during seizures are not possible using conventional methods. Therefore, in the present study haemodynamic variables were measured using Data Sciences International (DSI), USA, Telemetric System.

Pentylenetetrazole 50mg/kg IP was given to the animals to induce seizures, 5 minutes after pentylenetetrazole injection the seizures were observed in the animals. The different phases of seizures were identified by observing the behaviour of the animal. The seizures lasted about 30 minutes after pentylenetetrazole injection. During this period there was an increase in the mean blood pressure in Group-I. Then there was a fall in the blood pressure, blood pressure began to normalize after 20 minutes. Verapamil showed slight inhibition of seizure induced hemodynamic changes in all animals during all the phases of seizures.

Our results clearly support the view that epileptic seizures induced cardiovascular changes are partly mediated through calcium influx as the intensity of the effect was reduced by pretreatment with calcium channel blocker.

10. Studies on hemodynamics and vascular responsiveness in rabbit model of non-cirrhotic portal hypertension

The effect of non-cirrhotic portal hypertension on isolated aortic tissues of rabbits was studied. The results have shown a hyporesponsiveness of aortic smooth muscle activity in isolated aortic segments recorded in isolated tissue organ bath set-up. The tissues from control animals and from experimental animals (NCPF) were tested with vasoconstrictors. By inhibiting endothelium dependent mechanism individually (NO blocker, K channel blocker, postacyclin inhibitor) we have attempted to elucidate whether vascular endothelium has any role in the hyporesponsiveness to vasoconstrictor agent in tissues from NCPF animals.

11. Effect of gadolinium on airway mechanoreceptors

Mechanoreceptors located in the circulatory system respond to changes in transmural pressure. For instance, a mechanical deformation of the arterial wall activates the baroreceptors. It is well recognized that the mechanical stimulus depolarizes the nerve ending which triggers the production of action potentials. But, the mechanism by which this transduction occurs is not fully understood. Recent studies performed in the rabbit have shown that in presence of gadolinium (a trivalent lanthanide), the sensitivity of arterial baroreceptors to an increase in carotid sinus pressure is reduced suggesting that stretch activated ion channels are involved in the sensory transduction.

Sensory receptors located in the airways, namely the slowly adapting pulmonary stretch receptors (SARs) and the rapidly adapting receptors (RARs) are also mechanosensitive. For a maintained hyper-inflation of the airways, both these groups of receptors respond with a high frequency of discharge. We hypothesized that like the arterial baroreceptors, stretch activated channels are involved in their responses to hyper-inflation. The present study performed in the rabbit explored this possibility using gadolinium as a specific blocker for stretch activated channels. In the second part, we investigated the responses of the RARs to acute elevations of left atrial pressure in the presence of gadolinium. Even though it is well accepted now that increases in left atrial pressure activate the RARs, the mechanism behind the mechanoelectrical sensory transduction is not known.

In the anesthetized, artificially ventilated rabbit, after identifying either a SAR or RAR, the expiratory port of the ventilator was occluded and the lungs were inflated for three breaths and the receptor responses were recorded. The occlusion was released and the location of the receptor was localized. Cotton wool soaked in gadolinium was placed over the receptive area and the responses of the receptors to hyper-inflation were repeated. Gadolinium was then removed, the lungs washed repeatedly with normal saline and finally, the recovery responses to hyper-inflation were obtained. In case of RARs, their responses to step increases in left atrial pressure (+5 and +10 mmHg, each applied for 5 min) before and after gadolinium were also studied.

It was observed that the responses of SARs and RARs to hyper-inflation were reduced significantly following the application of gadolinium. In presence of gadolinium, increases in left atrial pressure failed to stimulate the RARs. After the removal of gadolinium, the responses of SARs and RARs to hyper-inflation were restored. There was a partial recovery of the responses of RARs to increase in left atrial pressure also. It is concluded that stretch activated ion channels are involved in the responses of these airway mechanoreceptors to hyper-inflation and pulmonary congestion.

12. Effect of deep inspiration on maximal expiratory flows in asthmatics: Relationship to disease severity and modulation by anti-asthma drugs

In the controlled state, deep inspiration has no appreciable effect upon airway caliber in normal healthy subjects. But, in them, deep inspiration prior to induced bronchoconstriction by methacholine, causes significant decreases in the bronchoconstrictor effect of methacholine. In the asthmatic subjects, acutely induced airway obstruction is reversed partially by deep inspiration. However, in spontaneous airway obstruction, a deep inspiration increases the severity of the pre-existing obstruction. In the present study performed on mild, moderate and severe asthmatic patients, we elucidated first the role of deep inspiration on airway caliber and then investigated the modulatory role of bronchodilators and corticosteroids on it. To study the effect of deep inspiration on airway caliber, we used the M/P ratio (the ratio of flow rates derived from maximum expiratory flow-volume curve and partial expiratory flow-volume curve). The M/P ratio was found to be unity in normal control subjects. It remained so in mild and moderate asthmatic patients. However, in severe asthmatics, it was significantly lower than unity. The results suggest that the effect of deep inspiration on airway caliber depends upon the severity of the disease and in severe asthmatics, it actually promotes bronchoconstriction. The modulatory roles of inhalational salbutamol, and ipratropium bromide before and seven days after oral intake of corticosteroids on the M/P ratio are under investigation.

Radiodiagnosis and Imaging

The Department continued to provide routine diagnostic services to the patients attending the CRC of the Institute and other nearby hospitals. The Department consists of three units: *(i)* CT Scan Unit, *(ii)* Ultrasound Unit and *(iii)* X-ray Unit.

(i) CT Scan Unit

A total of 859 CT scan examinations were performed during the year as per details given below:

Examination	Number
Chest CT	689
Head CT	30
PNS CT	36
Spine CT	02
Abdomen CT	11
CT guided FNAC	91
Total	**859**

(ii) Ultrasound Unit

A total of 613 ultrsound examinations were done during the year as per details given below:

Examination	Number
Chest USG	237
Abdomen USG	334
USG guided procedures	42
Total	**613**

(iii) X - ray Unit

A total of 10934 x-ray examinations were done during the year as per details given below:

Examination	Number
Chest x-ray	10811
Abdomen x-ray	51
Bone x-ray	72
Total	**10934**

Respiratory Allergy and Applied Immunology

Research

1. Studies on the newer fungal aeroallergens in Delhi atmosphere

Identification and quantification of various air born fungal spores was continued and seasonal periodicity of different common fungal species was undertaken. For this purpose three different sampling techniques have been used. Mass culturing of some newer fungal species has been initiated for preparation of allergen extracts and evaluation of their allergenic significance.

2. Inhibitory effect of Azelastine nasal spray on histamine and allergen induced skin prick test (SPT) response in patients with allergic rhinitis

In one of our earlier studies, prior administration of some anti-allergic medicines such as theophylline, salbutamol, ephedrine, prednisolone and epinepherin did not suppress the skin test response to various allergens. However, various anti-histamines when given orally produced significant inhibition of histamine and allergen induced skin test responses, varying from 36 hrs to 45 days. It was felt that topical application of anti-histamine may not suppress the skin test response to histamine and positive allergens as the dose of anti-histamine used is very small. Thus, we have studied the effect of azelastine nasal spray (ANS) on histamine and allergen induced skin wheel responses.

Skin prick test with histamine and specific allergen extracts were performed on patients of type I allergic respiratory disorders, before, and 2 hrs and 6 hrs after single application of azelastine nasal spray; and 2 hrs, 6 hrs and 24 hours after the last dose of 6 days (twice daily) use of the spray. A total number of ten patients (5 males and 5 females) have been studied.

None of the patients showed significant suppression of skin prick test response to histamine and allergens after application of nasal spray. Our results suggest that performance of diagnostic skin tests can be performed on the patients of allergic rhinitis even when they are using anti-histamine nasal spray. ***(Principal Investigator: Prof. M.K. Agarwal, Co-investigator: Dr V.K. Vijayan)***

3. Comparative evaluation of allergenic significance of various species of mosquitoes prevalent in Delhi metropolitan area and physicochemical and immunochemical characterization of their whole body extracts

Various insects, including cockroach, housefly and moth have been incriminated as sources of inhalant allergens. Mosquito is a prevalent insect in India. During their life cycle, scales and other emanation from the body are disseminated into the air. Furthermore, detritus produced after death and decay of mosquitoes also become airborne. These mosquito emanations and detritus may serve as potent inhalant allergens and causes symptoms in patients with allergic respiratory disorders. Several species of mosquitoes are prevalent in Delhi atmosphere including *Anopheles stephensi, Culex quinquefasciatus* and *Aedes aegypti*.

No detailed studies are available on the physicochemical and clinicoimmunologic characterization of allergen extracts of various mosquito species. It is proposed to undertake a

systematic and comprehensive study on the allergenic properties of mosquito derived products of different species; their aerosolization and heterogeneity of patients IgE mediated immune response to various major allergenic components of allergen extracts of different species of mosquitoes. Besides, identification, purification and isolation of clinically important major allergens of different mosquito species will also be attempted. Based on the results of this study, it will be possible to identify the most impotant species of mosquito for diagnosis and immunotherapy of patients suffering with allergic respiratory disorders in our country.

Rearing of pure culture of *Culex* species and preparation of aqueous extracts has been undertaken to prepare suitable amount of allergen powder for the present study. Rearing of other two species of mosquitoes and preparation of their WBE will follow. ***(Principal Investigator: Prof. M.K. Agarwal, Co-investigators: Prof. S.K. Bansal, Dr V.K. Vijayan)***

4. Identification, purification and characterization of major and minor allergens of some clinically important allergens of India used for the diagnosis and immunotherapy of patients suffering with allergic rhinitis and bronchial asthma, and development of techniques and reagents for their quality control

Aeroallergens play an important role in the etiology of allergic respiratory disorders. For identification of offending allergens, various diagnostic tests are performed on these patients followed by immunotherapy with the causative allergens. Both, the diagnostic efficiency as well as therapeutic efficacy of these procedures depend on the biopotency of these extracts. In western countries, allergen extracts are now standardized or are pending standardization for total allergenic potency, biological activity and total allergen content. In India, however, crude, aqueous allergen extracts are used, which have not been properly characterized or standardized since procedures and reagents are not available for their quality control. Therefore, there is an urgent need to undertake a systematic and comprehensive study to: *(i)* identify major and minor allergens of various clinically important indigenous allergen extracts of our country and *(ii)* develop techniques and prepare reference reagents for quality control of clinically important indigenous allergen extracts. For the present study extracts of various clinically important inhalant allergens, i.e. pollen, fungi, insects etc., will be studied.

In the first phase of this study, we have undertaken investigations involving purification and characterization of important allergenic components of some clinically important insect whole body extracts (WBE), namely cockroach female, cockroach male, housefly, dragon fly and moth. Patients were skin tested with crude WBE and various clinicoimmunologic tests were performed, such as RAST/ RAST inhibition with the sera of these patients to evaluate the allergenic significance of these insects. SDS-PAGE of crude insect extracts and immunoblots with the sera of a group of patients were performed and major allergenic components of these insects were identified. Further studies with other clinically important inhalant allergens, i.e. pollen, fungi, insects etc., are underway. ***(Principal Investigator: Prof. M.K. Agarwal, Co-investigators: Prof. S.K. Bansal, Dr V.K. Vijayan)***

5. A controlled trial of oral N-acetylcystine in the treatment of moderate to severe COPD

The study was performed to find out the effect of 600 mg of oral N-acetylcystine (NAC) per day on clinical and physiological parameters and frequency of exacerbations in cases of moderate to severe COPD. There was a decrease by 46% in the number of exacerbations in the group

treated with NAC. The number of sick days was also less in the NAC group. A small but significant improvement in FVC and FEV_1 was seen in this group. The patients also had lower symptom score and drug score. It was concluded that the addition of NAC results in improvement in the lung function parameters of patients with moderate to severe COPD along with decrease in symptoms and exacerbations.

6. Effect of high dose inhaled fluticasone propionate on hypothalamo-pituitary-adrenal axis in patients of bronchial asthma

Inhaled corticosteroids are currently the mainstay in the management of asthma. However the potential for long-term adverse effects from these drugs relate from their systemic absorption. With the increasing use of fluticasone propionate (FP) it is important to establish whether untoward side effects such as hypothalamo-pituitary-adrenal axis (HPA) suppression takes place when high doses of FP are given. This study was conducted to evaluate the serum and urinary cortisol levels of asthmatic patients after treatment with high dose (1000 mg/day) inhaled FP for six weeks. In the present study, a double blind crossover design was adopted and HPA axis evaluated by determining the serum and urinary cortisol levels, which is correlated with the pulmonary function tests. The conclusion drawn was that FP, if given at doses of 1000 mg through a spacer, is safe and does not cause any suppression of HPA. Additionally, a significant increase in pulmonary function variables was also recorded.

Respiratory Medicine

The Department is involved in the patient care (Outdoor and Indoor), research on different aspects of respiratory diseases and teaching of the postgraduate courses in the subject – Pulmonary Medicine (MD and DTCD) of University of Delhi.

Research

1. Prevalence of sleep related breathing disorders in Indian adults

A study to ascertain the prevalence of sleep related breathing disorders in Indian adults was conducted in rural population of Delhi. Villages in rural areas were selected randomly for this purpose. A list of 232 villages of National Capital Territory (NCT) of Delhi was obtained and 19 villages were selected randomly. Population of each village was ascertained and households from each village were selected by simple random sampling technique to obtain a sample of 350 – 400 people from each village. Field Investigators (Medical – Social Workers) made home visits to administer a predetermined questionnaire to all adult members of over 18 years of age residing in the house and asked questions exactly as per the questionnaire and filled up the responses. The questionnaire had 15 multiple-choice questions and each question was scored according to the severity of breathing disorder symptoms by use of a five-point scale. Each subject was asked to choose one of the five alternative answers to each question: 1. "never", 2. "less than once a week", 3. "once or twice a week", 4. "three to five nights/day a week" or 5. "almost everyday/night". The responders were classified as having sleep related breathing disorder symptoms, if they had loud snoring (scores 4 or 5) and/or daytime sleepiness (falling asleep immediately during the day time while working, reading etc.) (scores 4 or 5). At the time of interview, age, weight (portable scale) and height were recorded. Detailed sleep study (polysomnography) will be conducted in the Institute on a group of subjects with snoring and daytime sleepiness (scores 4 or 5).

The questionnaire on sleep related breathing disorders was administered to 7016 subjects from 19 villages with an approximate population of 182200 and this included 3559 (51%) males and 3457 (49%) females. The mean age of the study population was 38.31 $\pm$ 15.18 years, mean height 1.63 $\pm$ 0.09 meters, mean weight 58.97 $\pm$ 10.35 kg and mean body mass index (BMI) was 22.13 $\pm$ 3.34 kg/m^2. Of the 7016 subjects in the study, 664 (9.5 %) had sleep related breathing symptoms [434 (12.2%) of males and 230 (6.7%) of females].

The symptom of snoring was significantly higher in males (10.4% *vs* 3.4%), (P<0.0001) compared to females. However, day-time sleepiness, morning headache, memory loss, tiredness, nightmares, nocturnal awakening and history of hypertension were significantly higher in females. Subjects with sleep-related symptoms were significantly older in both males (45.73 $\pm$ 13.77 yr *vs* 37.8 $\pm$ 15.35 yr, P<0.0001) and females (46.16 $\pm$ 15.76 yr *vs* 37.25 $\pm$ 14.71 yr; P<0.0001) compared to subjects without symptoms. The mean weight and mean body mass index were also significantly higher in both males and females compared to subjects without symptoms. Among the subjects with sleep related symptoms, the prevalence of snoring was significantly higher in males (85.2% *vs* 48.7%, P<0.001) compared to females. The proportion of subjects having sleep related symptoms increased as age advances upto 50 years and thereafter there was a decline till 80 years of age.

Detailed polysomnographic studies were done in 24 subjects so far.

2. Multicentric study on prevalence of bronchial asthma in adults

A multicentric study on prevalence of bronchial asthma in adults was completed. This project was initiated by the ICMR Task Force for Asthma and was carried out in Delhi, Chandigarh, Kanpur and Bangalore. In Delhi, more than 15000 subjects were studied, distributed about equally in rural and urban areas. A standardized questionnaire was used. The study has been completed and data is being analyzed. ***(Principal Investigator: Dr V.K. Vijayan, Co-investigator: Prof. S.K. Chhabra)***

3. Allergic rhinitis in Delhi: A comparative profile of "sneezers and runners" and "blockers"

Allergic rhinitis, often erroneously viewed as a trivial disease, is a cause of significant and widespread morbidity. The clinical profile of 114 adult patients (63 males, 51 females) with allergic rhinitis, having normal pulmonary functions and a positive skin allergy test, was evaluated with the help of a questionnaire. The patients were classified as "sneezers and runners" (Group 1, 72, 63%) and "blockers" (Group 2, 42, 37%). The mean age at onset of disease (17 years) was significantly less in Group 1 ($p<0.05$). There were significantly more patients of moderate-severe intermittent category in Group 1 (36%) and mild persistent in Group 2 (52%). History of breathlessness (90%), mouth breathing (81%) and prior nasal surgery (31%) were significant in "blockers"($p<0.05$). In Group 1, more patients were born between June and September ($p<0.05$). Family history of atopy (88%) percent, itching of skin (26%), eye (43%), ears (43%), throat and palate (67%), and aggravation of symptoms with house dust (93%) were significant in Group 1 ($p<0.05$). Environmental tobacco smoke (ETS) aggravated symptoms in 80 percent. "Sneezers and runners" were the predominant group and had significantly more personal and family history of atopy. "Blockers" had a significantly more history of breathlessness, mouth breathing and prior nasal surgery. Month of birth and exposure to ETS were some of the other factors associated with allergic rhinitis.

Intradermal allergy tests with 63 local aeroallergens were done in all patients. Seventy-nine (69%) were sensitive to pollens, which were significantly more in Group 1 (61, 85%) ($p<0.05$). In this group, among the pollens, weeds were positive in 49 (68%), grasses in 51 (71%) and trees in 39 (54%) patients ($p<0.05$). Group 2 had significantly more sensitization to fungi (26, 62%) and house dust mite (17, 41%) ($p<0.05$). Sensitization to insects (75, 66%), kapok cotton (6, 5%) and wool (4, 3%) was more in Group 1. "Sneezers and runners" had significantly more sensitization to pollens. "Blockers" had significantly more sensitivity to fungus and house dust mite. The frequency of sensitization with insects, kapok cotton and wool were more with "sneezers and runners" but the difference was not statistically significant.

4. Co-occurrence of allergic rhinitis and bronchial asthma, and effect of exposure to environmental tobacco smoke in patients with bronchial asthma and /or rhinitis

Allergic rhinitis and bronchial asthma are now being described as a continuum of inflammation involving one common airway. Exposure to environmental tobacco smoke (ETS) is increasingly being recognized as a key factor in asthma. This study aimed to determine the frequency of co-occurrence of allergic rhinitis and bronchial asthma and to assess the effect of ETS in these patients. A total of 111 patients with a clinical diagnosis of bronchial asthma and/or allergic rhinitis were included in the study. Twenty healthy subjects with no personal or family history of atopy served as controls. All the patients and controls were administered a questionnaire by the same investigator.

Of the 111 patients, 83 had bronchial asthma and allergic rhinitis, 9 had bronchial asthma only and 19 had allergic rhinitis only. The frequency of co-occurrence of bronchial asthma and allergic rhinitis was 90.2 percent. Both current and perinatal ETS exposure were significantly high in patients with asthma, with or without rhinitis. Cough was the most common symptom on exposure to ETS followed by breathlessness. Both were significantly high in patients with asthma, with or without rhinitis. This study demonstrated that bronchial asthma and allergic rhinitis are closely linked to each other with a co-occurrence of 90 percent. It also showed that ETS exposure, both current and perinatal, is significantly associated with the occurrence of asthma.

5. A study of skin sensitivity to various allergens by intradermal tests in patients with respiratory allergy (bronchial asthma and allergic rhinitis) in India

Three hundred and forty-one patients with bronchial asthma and/or rhinitis (208 males and 133 females) with a mean age of 30.44 years (10-80 years) were studied for skin sensitivity to various allergens by intradermal skin tests. A total of 20,119 skin tests were performed with 59 allergens. It was found that only half of the patients (52%) showed a markedly positive skin reaction to one or more of the various allergens tested. Insects (17.20%) followed by various types of dust (4.39%), pollen (2.28%), weeds (2.18%), trees (1.22%), and fungal spores (1.22%) were the most common offending agents; 1.75% the patients also showed a markedly positive reaction to kapok fiber. Housefly (25.21%), mosquito (21.11%), moth (19.94%), and female cockroach (17.59%) were the most important insect allergens. Cotton dust (6.47%), wheat dust (5.86%), paper dust (3.81%), and house dust (1.46%) were the most commonly implicated types of dust. Among the various types of pollen, *Cynodon* (4.10%), *Pennisetum* (2.63%), and *Imperata* (2.34%) were the most common allergens, whereas *Brassica* (5.27%), *Amaranthus spinosum* (4.98%), *Argemone* (4.98%), *Amaranthus H.* (3.51%), *Artemisia* (2.93%), *Ageratum* (2.34%), and *Parthenium* (2.34%) were the most common weeds. *Salvadora* (2.34%), *Ailunthus* (1.75%), *Prosopis* (1.75%), *Cassia siamea* (1.46%) were the most commonly implicated types of trees. Among the fungal spores, *Mucor* (2.05%), *Aspergillus fumigatus* (2.05%), *Rhizopus* (1.75%), *Fusarium* (1.75%), *Aspergillus tamori* (1.46%) and *Phoma* (1.46%) were the most common. It was also shown that young adults were the most commonly affected; 67.8% of the patients suffered from both the diseases.

6. Epidemiological aspects of allergic bronchopulomonary aspergillosis

Aspergillus is a highly ubiquitous mould known to cause various forms of disease in man. However, there is uncertainty about the frequency of sensitization to *Aspergillus* in asthmatic population. The incidence of immediate skin reaction to *Aspergillus* varies from 16 to 23 percent. Such marked variation in the incidence of immediate skin reactivity to *Aspergillus* is probably as a result of lack of standardized antigen for testing. Allergic bronchopulmonary aspergillosis (ABPA) was first reported in England in 1952. Since then a number of cases have been diagnosed and reported from many countries. The incidence of ABPA has been found to vary from 3.7 percent to 16 percent. There is a lack of diagnostic testing in remote areas, uniformity in the diagnostic criteria and proper standardization. Thus, epidemiological considerations will vary from place to place.

7. Association of family history of allergy in patients of asthma: Do parents confer more risk than grandparents?

Heredity plays a major role in asthma and in other allergic disorders but the underlying mechanism of inheritances are poorly understood. The purpose of this study was to examine family patterns of allergic disorders in patients of asthma. It was a questionnaire-based study in

which patients of asthma and allergic diseases were evaluated for their family history of allergy. Twelve hundred patients were taken for the study. Atopic family history for asthma or other allergic conditions was present in 578 (48.1%) patients. Family history of asthma in parents and grandparents was noted in 36.8% and 19%, respectively. The family history of rhinitis was present in 17.6% of parents and 3.6% of grandparents. In our cohort, we observed that the presence of asthma, allergic rhinitis and eczema in parents increases the likelihood of occurrence of these diseases in their offsprings. Our result suggests that both parental and grandparental influences have a stronger association with asthma and other allergic conditions in patients, but parents confer more risk than the grandparents.

8. Banana sensitization in patients of respiratory illness including bronchial asthma

Banana is widely cultivated and consumed as nutrition diet all over the world. It is available almost whole year in major part of India. Type I hypersensitivity to banana has been reported from other countries. Banana allergens are known to cause sensitization in large number of latex allergy patients. The present study was aimed to determine prevalence of banana allergy and to investigate clinical features of acute reaction by standard *in vivo* and *in vitro* tests. Eleven hundred patients, visiting out-patient department of V.P. Chest Institute, Delhi were screened using a standard questionnaire during April 2002 to September 2003. The detailed history of illness was recorded and from the total, 192 patients gave history of allergy to banana on further evaluation, 56 (29.1%) patients revealed history of sensitization after intake of banana. Among these maximum number of patients having rhinitis with asthma followed by asthma and rhinitis alone. Skin prick tests with banana extracts showed marked positive reactivity in 21.4% patients, whereas prick to prick test demonstrated skin sensitivity in 22.7% patients. Specific IgE against banana allergens was observed elevated (OD 0.30 to 0.65; control OD 0.10) in sera of 19 patients. Oral challenge and double-blind placebo-controlled challenge with banana confirmed sensitization in six patients. The symptoms produced after challenge tests were rhinorhoea, sneezing, exacerbation of asthma, abdominal pain, oral allergy syndrome, etc. In conclusion, 8.9% patients of respiratory illness (rhinitis, asthma or both) showed allergic reaction to banana with mild to severe symptoms. Allergic patients including asthmatics are advised to undergo prick to prick test and food challenge tests before practicing avoidance of banana in their diet.

9. Prevalence of bronchial asthma and allergic rhinitis in a girls school in Delhi

To determine the prevalence of childhood asthma and rhinitis in children of a girls school in Delhi, and to establish the relationship between various factors associated with the disease, a questionnaire-based study was done. Two thousand three hundred questionnaires were distributed among the students of a girls school in Delhi, to be completed by their parents at home. In total 2139 of the questionnaires were completed with an overall response of 93 percent. Five hundred forty three students (25.38%) were found to have some form of respiratory allergy, either bronchial asthma or allergic rhinitis. Nearly 15% children gave history of wheezing at some or the other time in their life. The prevalence of bronchial asthma and allergic rhinitis was found as 8.78% and 21.27%, respectively. Twenty-two percent children of allergic rhinitis had co-existent bronchial asthma, while 53.19% of bronchial asthma patients have co-existent allergic rhinitis. The prevalence of allergic rhinitis increased with increasing age. Birth order and family income did not have any significant impact, except that bronchial asthma was more common in students belonging to very poor socio-economic background. The family history of allergic rhinitis or bronchial asthma was significantly more ($p<0.05$) in students suffering from allergic rhinitis or bronchial asthma. The

prevalence of bronchial asthma and allergic rhinitis was found as 8.78% and 21.27%, respectively.

10. Assessment of the effectiveness of sustained release bupropion and intensive physician advice in smoking cessation

Tobacco use is the cause of immense burden on our nation in terms of mortality and morbidity, being the single leading cause of preventable illnesses and death. Smoking cessation interventions in our country will be the most cost effective of all interventions considering that the cost incurred on the three main tobacco related diseases (COPD, CAD, and Cancer) being around 27,761 crores in the year 1999. A double-blind placebo-controlled trial was conducted to see the efficacy of Bupropion in smoking cessation. The subjects (n=30) were randomly assigned to receive Bupropion SR 300 mg/day or placebo for seven weeks. Target quit date was preferentially 8th day of starting the treatment. Intensive counselling was provided by the physician at the baseline and brief counselling at every visit weekly during the treatment phase and at weeks 12 and 16. The seven day point prevalence abstinence rate at the end of week 2 and week 16 in the drug group was 46.67% and 53.33% respectively and in the placebo group it was 13.33% and 20% respectively with a P value of 0.04 and 0.05 respectively. Rate of continuous abstinence at weeks 4, 7 and 16 were 46.67%, 40% and 33.33% in the drug group and 13.33%, 13.33% and 13.33% in the placebo group respectively. The rates were significantly higher in the drug group till week 4 starting from week 2 of the treatment phase. The mean weight gain in the drug group was found to be significantly less as compared to the placebo at week 16 (P=0.025). The mean change of depression scores from the baseline was not significantly different between the two groups at any point of time. The withdrawal symptom score increase from the baseline was not significantly higher at any point of time in the drug group but in the placebo group the increase was significantly higher for seven days after target quit date and at week 3 and 4 (P<0.05). The most common adverse events in the drug group were insomnia in six (40%) patients and dry mouth and/or altered taste in four (26.67%) patients, which was significantly higher as compared to placebo. The univariate predictors of successful outcome at the point of prevalence abstinence at week 16 were older age (>40 years), (P=0.044) and quitter status at week 2 (P=0.001). Multivariate predictors in order of importance were quit status at week 2 (P=0.002) and age>40 years (P=0.031). The combined predictive value of these two variables was found to be 86.3 percent. Bupropion helps in smoking cessation. This study has also reflected this in the form of a significantly high 7-day prevalence abstinence at week 16 in the Bupropion group as compared to placebo.

11. Epidemiology of smoking habit of college students of University of Delhi, Delhi

To study the smoking habits of college students of University of Delhi, Delhi, India, one thousand one (673 males and 328 females) students from various colleges of Delhi University were surveyed during the study and information was collected through a pre-designed printed questionnaire. Eight-hundred and thirty-one (83%) students (619 males and 212 females) returned back the fiiled up questionnaires. Prevalence of tobacco use was 25 percent. Majority of students (56.7%) started tobacco use between the age of 16-20 years and 71.6% were smoking for the last 1-5 years. “For fun and pleasure” (82.7%) and “Peer pressure” (32.7%) were the most common reasons for starting smoking. Cigarette (98.6%) was the most common tobacco product used. Previous history to quit smoking was found in 41.8% of current smokers, while 54.3% showed their willingness to quit smoking at the time of survey. The reason for willingness to quit given by majority (64.6%) was awareness of harmful effects of tobacco. However, 95% of the students were aware of the harmful effects of tobacco. Family history of tobacco use was found in 51.6% of respondents (65.9%

smokers and 46.9% non-smokers). Public awareness measures should be the primary focus of governments especially in developing countries. Misleading advertising should also be dealt with severely.

12. Allergy to rice in Indian population: A chest hospital based survey

The knowledge about food allergy in India is scarce compared to western countries. A large number of food items such as peanut, fish, egg, lentil, banana, milk, wheat etc. have been reported allergenic inciting rhinitis, asthma and skin allergies. Rice is cultivated throughout and used as staple diet by a large population of the world. In India many asthmatics believe that rice can induce allergic reaction and thus aggravate breathlessness hence prefer to avoid it from their diet. The present study was undertaken to diagnose cases of rice allergy and educate people to manage their respiratory ailments effectively.

Out of 1200 cases screened using a questionnaire, 327 patients gave history of rice allergy. Skin prick tests carried out with rice extract demonstrated marked positive reactions in 20 (6.1%) patients. Specific IgE to rice was highly raised in these patients (ODs 0.51 to 0.70) as compared to normal controls (ODs 0.16). Oral food challenge in these cases confirmed allergy to rice in 10 (50%) patients. These patients experienced symptoms like rhinorrhoea, sneezing, severe breathlessness, chest tightness, oral thrust, abdominal pain, urticaria, etc., after the challenge test with rice. The symptoms appeared within 15 to 60 minutes of rice intake. In conclusion, rice allergy could be confirmed in about 3% cases out of 327 patients who complained sensitization (history) with rice. The patients of asthma or rhinitis should undergo appropriate *in vivo* as well as *in vitro* tests to prepare their diet elimination programme.

13. Breath carbon monoxide concentration in cigarette and *bidi* smokers

To measure and compare the “Breath Carbon Monoxide Concentration” in cigarette and *bidi* smokers, a study was conducted on smokers who visited the “Tobacco Cessation Clinic” for quitting smoking at V.P. Chest Institute, Delhi, India. Breath CO concentration was measured in cigarette and *bidi* smokers using portable breath CO analyzer. Statistical analysis was done to see for any difference in breath CO concentration in the two groups. Average CO concentration in cigarette (n=207) and *bidi* smokers (n=70) was 10.45 ppm (SD± 6.55) and 15.26 ppm (SD ± 7.89) respectively. Statistical analysis of the exhaled breath CO concentration in cigarette and *bidi* smokers showed that CO level is more in *bidi* smokers compared to cigarette smokers. Our study negates, to some extent, the popular belief that *bidi* is less harmful than cigarette. However more studies need to be done before we come to a definite conclusion.

14. Do sputum eosinophilia and blood eosinophilia related to severity of asthma?

A study was undertaken to find out the relationship of severity of bronchial asthma with sputum and blood eosinophilia. Twenty-one patients of bronchial asthma (14 males and 7 females) with a mean age of 32±11 years were studied for severity of airflow obstruction, sputum eosinophilia and blood eosinophilia. Mild, moderate and severe obstruction was seen in ten, one and three patients, respectively. Blood eosinophil count of ≥ 8% was seen in 10 patients, (47.61%). Sputum eosinophil count of ≥ 3% was seen in 12 patients (57.14%). Raised eosinophil count in blood as well as in sputum was seen in seven patients (33.33%). Amongst them three patients had normal FEV_1 while another four patients had mild airflow limitation. There is no correlation in the severity of obstruction and sputum eosinophilia or blood epsinophilia.

15. Epidemiological profile of smokers who seek treatment at a tobacco cessation clinic

The objective of our study was to identify the characteristics of smokers who currently seek treatment at Tobacco Cessation Clinic. This is a descriptive observational study. The target population consisted of 278 subjects who sought treatment at Tobacco Cessation Clinic at V.P. Chest Institute. The following variables were studied: age, sex, religion, marital status, occupation, smokeless tobacco user, smokers, number of cigarettes smoked per day, level of nicotine dependence (through Fagersrtom test), use of other potentially-addictive substances (especially alcohol), previous attempts to quit smoking, physical health problems, family history and expired air carbon monoxide (CO) level, presence of concomitant diseases, current reason for smoking cessation, etc. An initial medical history was taken in a pre-plan questionnaire. These individuals were enrolled in a 7-12 weeks tobacco cessation program that utilized both medical and cognitive-behavioural therapy as required after assessing the subjects. The results are presented in percentages and means with standard deviations (SD) and 95% confidence intervals (CI). Two hundred seventy-eight subjects were studied consisting of 273 (98.2%) males and 5 (1.8%) females. The average age being 36.08 years (SD ± 14.04). The majority of the subjects were Hindus (93.5%) followed by Muslims (5%) and Christians (1.4%). Most of the subjects were married (61.5%). Nearly 33% were students, followed by service class people (28.4%), businessman (20.1%) and others (18.7%). Mean nicotine-dependence (Fagerström Test score) was 4.94 (SD± 2.88). 34.2% of the subjects smoked their first cigarette/*bidi* within 5 minutes of waking. The mean number of years of smoking was 20.45 years (SD± 6.03). The concentration of CO in expired air measured at the time of initial interview (before start of smoking cessation) showed 26.3% as heavy smokers. History of previous attempts to quit smoking was present in 80 percent. The reason for present attempt to quit smoking was medical (45.3%), social (10.07%), and financial (6.83%). Smokers who attended to Tobacco Cessation Clinic were from younger age group. The prevalence of respiratory symptoms in this population is very low. Most of the subjects have multiple attempts of quitting and still they are enthusiastic and eager to quit smoking. The profile of the population seeking specialized smoking cessation as being student and younger age group, is expected to change in the future as if they quit right now at this age they might not suffer from the diseases in future.

Respiratory Virology

Research

1. Effect of zinc on influenza A virus induced apoptosis in HeLa cells

To investigate the process of influenza A virus induced cell death and the associated morphological changes, HeLa cells were infected with a cell adapted pathogenic strain of influenza A/Udorn/317/72 (H_3N_2) virus. Such cells underwent typical caspase-dependent apoptosis, causing chromosomal DNA fragmentation into oligonucleosomes. When these cells were pretreated with zinc (0.2 mM), before 6 h p.i., a remarkable decrease in caspase-3 activity and DNA fragmentation was observed. Annexin-V assay of the infected cells at various time periods indicated that the membrane phosphatidylserine appeared on the surface of virus-infected cells. The cells pretreated with zinc (0.2 mM) also showed low Annexin-V staining and eventually low phosphatidylserine (PS) externalization suggesting an inhibitory effect of zinc in a time and dose dependent manner. It was further observed that when the infected HeLa cells were incubated with adherent macrophages, efficient phagocytosis occurred. At the same time, the release of virus into the culture medium was completely inhibited. Moreover, phagocytosis became evident at significant levels at 9 hour. These results suggest that influenza virus infection causes apoptotic death of cultured cells. They also indicate that phagocytosis of the infected cells by macrophages may be phosphatidylserine-mediated and that apoptosis-dependent phagocytosis of virus-infected cells may lead to direct elimination of the pathogen.

2. Resolution of immune response by TGF-β1 after infection of influenza A virus

TGF-β is a potent immunomodulator and regulates the inflammatory process in a complex biphasic fashion. The immune response to influenza A virus is characterized by an influx of both macrophages and lymphocytes into the lungs of the infected host. In general, the pathogenesis of influenza infection can be divided into two phases, the cellular events that precede lymphocyte invasion and those that follow it. We hypothesize that the TGF-β negatively regulates the inflammatory response by regulating lymphocyte influx to the airway and further modulating release of proinflammatory and anti-inflammatory cytokines. Eight-week-old BALB/c mice were intranasally instilled with influenza A virus (A/Udorn/317/72/H3N2), $4.1x10^3$ PFU of virus in 50µl of allantoic fluid or mock infected 50µl of allantoic fluid. Mice was injected intravenously with injection of rTGF-β1, 0.5µg/ Kg body weight. The mice were euthanized on days 3, and 6 post infection (p.i.) and bled for cytology and cytokine assay. An increase in lymphocyte count was observed both on day 3 p.i. and day 6 p.i. However, administration of rTGF-β1 with virus reduced the lymphocyte count. The level of IFN-γ was increased third day of p.i. However, it reduced to based level on sixth day of p.i. Simultaneous administration of rTGF-β1 with virus instillation inhibited release of IFN-β on third day and increased level of IL-10 to the maximum was observed till sixth day. Therefore, present study indicated that rTGF- β1 acts as an immunomodulatory cytokine and inhibits lymphopoesis and lymphocyte activation after virus infection. Thus, it modulates the inflammatory process by inhibiting IFN-γ a proinflammatory cytokine and increased release of IL-10, which is an anti-inflammatory cytokine. rTGF- β1 affects recruitment of inflammatory cells at the site of inflammation by inhibiting lymphocyte invasion and interfering cytokine mediated inflammatory cascade.

3. Study of virological and biochemical regulatory mechanism of influenza virus induced apoptosis in murine model of allergic asthma

The mice were distributed into five experimental groups, viz. control group, virus group, ovalbumin (OA) group, acute phase group and recovery phase group as to develop the murine model of allergic asthma. Male BALB/c mice of six weeks old were given intraperitonial injection of ovalbumin in PBS on 0 day, sensitized on 14th day and challenged with 0.1% OA in PBS on 27-29th day. The lung fluid was influenza positive by hemagglutination test (HA) and the bacterial culture was negative. Histopathological examination of lungs in different groups revealed epithelial damage with focal areas of reactive papillary hyperplasia. The parenchymal response consisted of both interstitial and intra-alveolar exudate of neutrophils and macrophages leading to focal areas of consolidation. In a few places, dense peribronchial lymphoid aggregates were seen as compared to normal controls. The lungs of the acute phase group have shown oedema, extravagated RBCs, lymphoepithelial proliferation, dense peribronchial lymphoid aggregates with fair number of neutrophils and eosinophils, infiltration of these cells into alveolar septae. In virus group similar changes have been observed but they were of low grade. Intense infiltration of inflammatory cells into alveolar walls and peribronchiolar lymphoid infiltration has also been observed in virus group. In ovalbumin group, extravagation of RBCs was more conspicuous. There is formation of oedema and peribronchiolar lymphoid infiltration. In recovery phase group, reduced epithelial damage and leukocytic influx, decreased inflammation of inter-alveolar septae, decreased fibrin and only lymphoid aggregates (peribronchial) with few eosinophils were seen. ***(Principal Investigator: Dr Madhu Khanna, Co-investigator: Dr Sonal Sharma)***

4. Genetic analysis of influenza virus in clinical specimens by rapid molecular techniques

Thirty-five nasopharyngeal swab (NPS) and throat swab specimens from the patients of upper respiratory tract infection, attending the out-patient department of Maulana Azad Medical College (MAMC), Delhi, were collected. After processing, the specimens were inoculated into various cell lines, viz. MDCK and Hep2. Influenza virus was isolated from the four specimens exhibiting cytopathic effect (CPE) after 48 hours of incubation, which was confirmed by haemagglutination inhibition test. These specimens were stored at -80 ^{0}C for further characterization and typing of influenza virus by Restriction Fragmentation Length Polymorphism (RFLP), Single Strand Conformation Polymorphism (SSCP) and Hetroduplex Mobility Assay (HMA) techniques.

Standardization of the protocol for three molecular techniques, namely RFLP, SSCP and HMA for the rapid genetic analysis and characterization of clinical isolates is in process.

DST Centre for Visceral Mechanisms

Research

Human studies are being carried out on the following two projects:

(i) Origin of exercise hyperpnoea using a physiological model of exercise, and

(ii) Influence of stimulating the Juxtapulmonary capillary (J) receptors by physiological and chemical stimuli on exercise parameters.

The INSA Honorary Scientists Scheme

Research

1. Efficacy of swabbing *versus* a conventional technique for isolation of *Cryptococcus neoformans* from decayed wood in tree trunk hollows

In the course of further studies on the natural habitats of *Cryptococcus neoformans*, attention was focused on developing a more efficacious isolation technique. Accordingly, the efficacy of swabbing *versus* a conventional sedimentation technique was evaluated for sampling of decayed wood in tree trunk hollows for isolation of *Cryptococcus neoformans*. Of 52 samples of decayed wood, bark or other plant debris originating from 35 living trees, 42 wood samples yielded *C. neoformans*. The positive samples included 40 collected from 31 *Syzygium cumini* trees growing along roadsides in Old Delhi, wheresas the remaining two were from inside tree trunk fissures of *Ficus religiosa* in a New Delhi locality. The number of wood samples found positive by swabbing was 40 (95%) as opposed to 32 (76%) by the conventional technique, and this difference was statistically significant ($P < 0.01$). Also, the conventional technique showed 24% false negative results, in strong contrast to only 5% by swabbing. Furthermore, swabbing yielded a significantly higher *C. neoformans* mean colony count than did the conventional technique ($P<0.005$), thus highlighting greater efficacy of the former technique. The overall prevalence of *C. neoformans* in the *S. cumini* trees investigated was 84% (26/31 trees) which is the highest as yet reported from any tree species in India. Varietal identification and serotyping was done with 33 of the *C. neoformans* isolates, 31 of which came from 23 tree trunk hollows of *S. cumini* and two from the tree trunk fissures of *F. religiosa*. Among the *S. cumini* isolates, 26 were identified as *C. neoformans* var. *gattii* (all serotype B except two untypeable ones) and five as *C. neoformans* var. *neoformans*, serotype A (= *C. neoformans* var. *grubii*). Both of the *F. religiosa* isolates belonged to *C. n*.var. *neoformans*, serotype A. Being a more efficacious, simple, less time-consuming and less hazardous technique, swabbing is recommended for wider use in order to further elucidate the ecology of *C. neoformans.*

2. *In vitro* bio-interactions between *Candida* species, *Aspergillus fumigatus* and other human pathogenic fungi

Aspergillus fumigatus, strain SP 31/2K, showed *in vitro* inhibition by all of the 3 test strains of *Candida albicans* and 4 of *Candida glabrata*. It was noted that the degree of *A. fumigatus* inhibition varied with the antagonist fungal strain as also with the experimental design. In mixed streak cultures on Sabouraud agar (peptone-1%, glucose- 2%, agar- 2%, pH- 7) the inhibition varied from 55-85% with *C. albicans* strains and 85-95% with *C. glabrata* strains. In the two-member circular or U-shaped streak culture, the inhibitory effect was less marked, especially with the *C. albicans* strains. It was further shown that the inhibitory spectrum of *C. albicans* and *C. glabrata* extended to *Aspergillus flavus*, *A. niger* and *Penicillium marneffei.*

Exploratory investigations on the mechanism of inhibition revealed that the *in vitro* inhibition of *A. fumigatus* was markedly higher in sealed Sabouraud agar cultures than in unsealed cultures, suggesting that an important attribute of the inhibitory metabolite(s) released by *C. albicans* and *C. glabrata* was their volatile character. However, a detailed experiment ruled out the possibility that the inhibitory agent might be carbon dioxide as has been reported in the *in vitro* bio-interactions

between *C. albicans* and *T. mentagrophytes*. Besides, the results of additional experiments indicated that acidification of the medium might have a subsidiary role in the inhibition of *A. fumigatus* by *C. albicans*. The investigations done underscore the complexities of the inhibition mechanism that can be unravelled only through a long-term study.

The results of a series of experiments indicated that incorporation of 5 µg/ml of fluconazole in Sabouraud agar plates led to improved recovery of *A. fumigatus* from mixed streak culture with *C. albicans*, as also from 2 sputum specimens experimentally seeded with the same antagonistic fungi. A definitive conclusion about the efficacy of Sabouraud fluconazole agar for enhanced isolation of *A. fumigatus* must, however, await more extensive trials, employing a larger number of test strains of the interacting fungi.

Postgraduate Training and Teaching

The Institute has been conducting PhD programmes (Medical Sciences) since its inception in various specialities relating to chest diseases, *e.g.*, allergy and immunology, bacteriology, respiratory medicine, mycology, pharmacology, physiology, virology, etc. Besides this, the Institute conducts MD courses in pulmonary medicine, biochemistry, microbiology, pharmacology and physiology. It also conducts a Diploma course in tuberculosis and chest diseases (DTCD).

DTCD

Session 2002 - 2004	Session 2003 - 2005
1. Dr Manisha Kaushik	1. Dr Ruchi Arora
2. Dr Anant Kumar	2. Dr Deepak Bansal
3. Dr Rahul Madoiya	3. Dr Uday Aditya Gupta
4. Dr Nikhil Malhotra	4. Dr Kailashchandra Joshi
5. Dr Anupam Malik	5. Dr Jai Kumar Kriplani
6. Dr Shashank Sharma	6. Dr Vijay Kumar
7. Dr Ayushi Sikka	7. Dr R. Murali
8. Dr Manoj Singhania	8. Dr Sujata Natarajan
	9. Dr Nagendra Kumar Shulania

MD Degrees (Awarded)

(Session : 2000 - 2003)

S. No.	Name	Discipline
1.	Dr Ajay Gupta	Pulmonary Medicine
2.	Dr Vikash Maurya	Pulmonary Medicine
3.	Dr Pankaj Singhal	Pulmonary Medicine
4.	Dr Tajender Singh Vasu	Pulmonary Medicine
5.	Dr Bhawna Mahajan	Biochemistry
6.	Dr Monika Jain	Microbiology

MD Theses (Submitted)
(Session : 2001-2004)

Sl. No.	Name (Discipline)	Title of Theses	Supervisor(s)
1.	Dr Amit Dhamija (Pulmonary Medicine)	A comparision of conventional treatment with or without non-invasive bilevel positive airway pressure ventilation in acute exacerbation of COPD	Dr V.K. Vijayan
2.	Dr Krishan Gupta (Pulmonary Medicine)	Effect of pulmonary rehabilitation programme on disability in patients with chronic diffuse lung fibrosis	Prof. S.N. Gaur
3.	Dr Puneet Khanna (Pulmonary Medicine)	Assessment of sensory perceptions and preference of patients with allergic rhinitis to intranasal corticosteroid sprays	Prof. Ashok Shah
4.	Dr Shivu Kaushik (Pulmonary Medicine)	Assessment of evaluative and discriminative properties of a generic (SF-36) and specific quality of life instrument (AQLQ) in asthmatics	Prof. S.K. Chhabra
5.	Dr Pranav Singh (Pulmonary Medicine)	Effectiveness of sustained release bupropion and intensive physician advise in smoking cessation	Dr Raj Kumar
6.	Dr Pulkit Khurana (Med. Biochemistry)	Studies on transacetylase catalyzed modification of nitric oxide synthase activity in human platelets by 7, 8-diacetoxy-4-methylcoumarin	Prof. H.G. Raj Prof. Mridula Bose
7.	Dr Naveen Gupta (Physiology)	Effect of lead on airway smooth muscle activity in rats	Prof. M. Fahim

MD Theses (Pursued)
(Session : 2002-2005)

Sl. No.	Name (Discipline)	Title of Theses	Supervisor(s)
1.	Dr Rohit Caroli (Pulmonary Medicine)	Cardiorespiratory responses to exercise in patients with mild to moderate bronchial asthma	Dr V.K. Vijayan
2.	Dr Susheel K. Bindroo (Pulmonary Medicine)	Effect of home-based comprehensive pulmonary rehabilitation programme on disability in patients with persistent bronchial asthma	Prof. S.N. Gaur
3.	Dr Amit Sharma (Pulmonary Medicine)	To determine the frequency of co-occurrence of allergic rhinitis and bronchial asthma and to assess the effect of exposure to environmental tobacco smoke in patients with bronchial asthma and /or rhinitis	Prof. Ashok Shah
4.	Dr Tarun Chugh (Pulmonary Medicine)	Physiological and radiological characteristics in patients of chronic obstructive pulmonary disease	Dr Raj Kumar
5.	Dr Parag Vohra (Med. Biochemistry)	Studies on the acetoxy drug: Protein transacetylase catalysed activation of nitric oxide synthase in tracheal smooth muscle cells by polyphenolic acetates	Prof. H.G. Raj
6.	Dr Anurag Yadav (Pharmacology)	A clinical study to assess the relation-ship between smoking and pulmonary tuberculosis and its regulation by reactive nitrogen species	Prof. A. Ray Dr V.K. Vijayan
7.	Dr Manoj Kumar (Medical Physiology)	The effect of deep inspiration on maximal expiratory flows in asthmatics: Relationship to disease severity and modulation by anti-asthma drugs	Prof. K. Ravi Prof. S.K. Chhabra
8.	Dr Shweta Rawall (Respiratory Virology)	Induction of apoptosis during influenza A virus infection: A study in tissue culture cells	Dr Madhu Khanna Dr V.K. Vijayan

MD – Ist Year

(Session : 2003-2006)

S. No.	Name	Discipline
1.	Dr Amit Bansal	Pulmonary Medicine
2.	Dr Pankaj Chhabra	Pulmonary Medicine
3.	Dr Nitin Goel	Pulmonary Medicine
4.	Dr Vikas Mittal	Pulmonary Medicine
5.	Dr Om Prakash	Pulmonary Medicine
6.	Dr Ruchika Gulati	Biochemistry
7.	Dr Rashmi Puri	Microbiology
8.	Dr Priyanka Narayan	Pharmacology

PhD Awarded/Submitted

Sl. No.	Name (Discipline)	Title of Theses	Supervisor(s)	Status
1.	Ms Sumbul Fatma (Med. Biochemistry)	Transmembrane signalling during asthmogen cell interaction : Role of protein kinase C in peripheral blood lymphocytes and airway smooth muscle of guinea pigs	Prof. S.K. Bansal Prof. M.K. Agarwal Prof. S.K. Chhabra	Awarded
2.	Ms Shalu Gupta (Med. Biochemistry)	Study on the heterogeneity of immune response to insect allergens in patients with IgE mediated type I allergic respiratory diseases and antigenic and allergenic relationship among them	Prof. S.K. Bansal Prof. M.K. Agarwal Dr V.K. Vijayan	Awarded
3.	Mr Shamweel Ahmad (Microbiology)	Molecular characterization of clinical isolates of *Corynebacterium diphtheriae*	Prof. S.S. Thukral	Awarded
4.	Ms Divya Venugopal (Microbiology)	Isolation and characterization of native plasmid from clinical isolates of *Mycobacterium avium-intracellulare*	Prof. Mridula Bose	Awarded
5.	Mr Ashwini Kumar (Microbiology)	A study in understanding the virulence of tuberculosis by analysing polymorphism and expression profile of mce operons of *M. tuberculosis*	Prof. Mridula Bose Prof. Vani Brahmachari (ACBR, University of Delhi)	Submitted
6.	Ms Kaveri Chakrabarty (Physiology)	Effect of simulated high altitude exposure on airway smooth muscle activity: Role of nitric oxide and other epithelium derived factors	Prof. M. Fahim	Submitted
7.	Mr Hari Nath (Physiology)	Cardiovascular responses to severe cold and hypoxia in man	Prof. M. Fahim	Submitted
8.	Ms Soheila Fazli Tabei (Physiology)	Effect of lead exposure on dopamine receptor mediated changes in behaviour and mechanism of action of lead on vascular smooth muscle response in rats	Prof. M. Fahim	Submitted
9.	Mr Pankaj Kumar (Biomedical Sciences)	Molecular diagnosis of influenza virus in clinical specimens and study of pathogenesis of influenza virus in human and murine model	Prof. H.G. Raj Dr Madhu Khanna	Submitted

PhD Theses (Pursued)

Sl. No.	Name (Discipline)	Title of Theses	Supervisor(s)	Year of Registration
1.	Mr Ahmad Nadeem (Med. Biochemistry)	Oxidant-antioxidant balance in asthma and COPD: Evaluation of the role of alpha-tocopherol in treatment	Prof. H.G. Raj Prof. S.K. Chhabra	2000
2.	Mr Manoj Tyagi (Med. Biochemistry)	Signalling mechanism during the expression of proinflammatory cytokines in asthma : A study on role of protein kinase C in macrophage activation and release of interleukin-1 beta	Prof. S.K. Bansal Dr V.K. Vijayan	2001
3.	Ms Garima Gupta (Med. Biochemistry)	Studies on purification, characterization and molecular cloning of acetoxy drug: Protein transacetylase from *Mycobacterium smegmatis*	Prof. H.G. Raj Prof. M. Bose	2002
4.	Mr Ajit Kumar (Med. Biochemistry)	Studies on biochemical actions of oxygen containing hetrocyclic polyphenols and their acetates on drug metabolism	Prof. H.G. Raj Dr A.K. Prasad Chemistry Deptt., University of Delhi	2002
5.	Mr Vikram Srivastava (Medical Microbiology)	Role of apoptosis in the pathogenesis of influenza A virus, correlation of virological and immunological parameters: A study in human and murine model	Dr Madhu Khanna Dr V.K. Vijayan	2004
6.	Mr Sujeet Kumar (Microbiology)	Molecular analysis of *Mycobacterium avium* complex isolates by using restriction fragment length polymorphism and PCR typing	Prof. Mridula Bose Prof. Madalsa Mathur (UCMS, Delhi)	2000
7.	Mr Sugata Roy (Microbiology)	Cytokine mediated transcriptional induction of human inducible nitric oxide synthase gene in the lung epithelial cell line A549 infected with *Mycobacterium tuberculosis*	Prof. Mridula Bose Dr Mandira Varma	2000
8.	Ms Anbrin Masood (Pharmacology)	Studies on the neuroimmunomodulatory role of nitric oxide (NO) in stress	Prof. A. Ray Prof. B.D. Banerjee (UCMS, Delhi)	2000

Sl. No.	Name (Discipline)	Title of Theses	Supervisor(s)	Year of Registration
9.	Dr Vishal Bansal (Physiology)	Mechanism of action of estrogen on hemodynamic parameters in rabbits	Prof. M. Fahim	2000
10.	Ms Sujata Upadhyay (Physiology)	Role of oxidative stress in the induction of bronchial hyper-responsiveness and its modulation by dietary anti-oxidant vitamins C and E in guinea pigs	Prof. K. Ravi Prof. S.K. Chhabra	2001
11.	Mr NamdarYousefvand (Physiology)	Cardiovascular functions on exposure to arsenic in rats	Prof. M. Fahim	2002
12.	Ms Mahin Dianat (Physiology)	Effect of morphine on neural regulation of blood pressure and behaviour in animals	Prof. M. Fahim	2002

Faculty Members Associated as Co-supervisors for PhD Theses of Other Institutions

Sl. No.	Name (Discipline)	Title of Theses	Supervisor(s)	Status
1.	Ms Ekta Kohli (Chemistry)	Studies on biotransformation of acetoxy-4-methyl coumarins with special reference to the role of acetoxy drug: Protein transacetylase	Prof. N.K. Kaushik (Chemistry Deptt., University of Delhi) Prof. H.G. Raj	Awarded
2.	Dr Deepa Gadre (Microbiology)	Isolation, identification and plasmid profiles of non-tuberculous mycobacteria isolated from hospital patients and environment	Prof. Vibha Talwar (UCMS, Delhi) Prof. Mridula Bose	Submitted
3.	Mr Robinson Jhallabhai (Physiology)	Arterial baroreflex responses during experimentally induced hypercholesterolemia in rabbits	Prof. V.M. Ahuja (MAMC, New Delhi) Prof. M. Fahim	Submitted
4.	Ms Ranju Kumari (Med. Biochemistry)	Studies on molecular mechanisms of acetyl–CoA independant acetylation	Prof. K. Muralidharan (Zoology Deptt., University of Delhi) Prof. H.G. Raj	Pursued
5.	Ms Seema (Med. Biochemistry)	Studies on acetoxy drug protein transacetylase	Prof. R.C. Rastogi (Chemistry Deptt., University of Delhi) Prof. H.G. Raj	Pursued
6.	Ms Bano Saidullah (Physiology)	Bronchial reactivity in diabetic guinea pigs/rats	Prof. K. Muralidharan (Zoology Deptt., University of Delhi) Prof. M. Fahim	Pursued
7.	Mr M. Irfan Beig (Physiology)	Neural and cardiovascular responses during epilepsy in conscious animals	Dr Anju Katyal (Dr B.R. Ambedkar Centre for Biomedical Research, University of Delhi) Prof. M. Fahim	Pursued

Distinguished Visitors

1. **Dr Shoibal Mukherjee,** Senior Director (Medical), Pfizer Limited, Mumbai.
   Title of Lecture: Ethical issues in clinical research. (August 7, 2003)

2. **Dr Douglas Bettcher,** FCTC Coordinator, Tobacco Free Initiative WHO team from Geneva and others visited Tobacco Cessation Clinic (TCC), V.P. Chest Institute. They appreciated work done by TCC, VPCI and distributed certificates to quitters. (September 22, 2003).

3. **Dr D.S. Tiwary,** Adviser, DST, Govt. of India, New Delhi. (December 4, 2003)

4. **Prof. Gautam Chaudhuri,** Executive Chair, Department of OBG and Department of Pharmacology, UCLA School of Medicine, Los Angeles, USA. (December 4, 2003)

5. **Prof. R. Raveendran,** Department of Pharmacology, JIPMER, Pondicherry. (December 4, 2003)

6. **Prof. A.N. Maitra,** Department of Chemistry, University of Delhi, Delhi. (December 8, 2003)

7. **Dr Arun Balakrishnan,** Centre for Biotechnology, Anna University, Chennai. (December 8, 2003)

8. **Prof. Indira Ghosh,** Head, Department of Bioinformatics, University of Pune, Pune. (December 8, 2003)

9. **Prof. R.K. Goyal,** General Secretary, Indian Pharmacological Society, Ahmedabad. (December 8, 2003)

Awards/Honours

Dr V.K. Vijayan

- Re-elected as **International Regent** for India, American College of Chest Physicians, U.S.A.
- **President-Elect**, Indian Society for Bronchology.
- **Editor-in-Chief and Publisher**, *The Indian Journal of Chest Diseases & Allied Sciences*, an official publication of the V.P. Chest Institute and the National College of Chest Physicians (India).
- **Member,** Editorial Advisory Board, *Chest* (Indian Edition), an official publication of American College of Chest Physicians, U.S.A.
- **Member,** Editorial Advisory Board, *Thorax* (Indian Edition), an official journal of British Thoracic Society, U.K.
- **Member,** International Advisory Board, *Internal Medicine Journal of Thailand*, an official publication of the Royal College of Physicians of Thailand, Thailand.
- **Member,** International Advisory Board, *The Journal of Enviornmental Medicine*, Thailand, published under the Enviornmental Medicine Centre, Mettapracharak Hospital (What Rai Khing).
- **Member,** Editorial Advisory Board, *Lung India*, an official publication of the Indian Chest Society.
- **Member,** Editorial Board, *Indian Journal of Tuberculosis*, an official publication of the Tuberculosis Association of India, New Delhi.
- **Member,** Editorial Advisory Committee, *Pulmon*, an official publication of the Academy of Pulmonary and Critical Care Medicine.
- **Referee** to Council of Scientific & Industrial Research (CSIR), Indian Council of Medical Research (ICMR), Department of Science & Technology (DST) and Department of Biotechnology (DBT) for evaluation of extra-mural projects.
- **Member,** Expert Group on "Severe Acute Respiratory Syndrome", Directorate General of Health Services, Government of India, New Delhi.
- **Member,** Project Review Committee (PRC) for the Division of Non-Communicable Diseases (NCD) for the areas of Bio Engineering, Environment and ENT, Indian Council of Medical Research (ICMR), New Delhi.
- **Member,** Project Review Committee of Indo-US Joint Working Group, Indian Council of Medical Research (ICMR), New Delhi.
- **Advisor** to Union Public Service Commission to assist the Personality Test Board for interviewing candidates who have qualified in the Combined Medical Services Examination.
- **External Expert** to select a Deputy Director at National Institute of Occupational Health, Ahmedabad.

- **External Expert** to select Junior Medical Specialist, LRS Institute of TB & Respiratory Diseases, New Delhi.
- **Expert Member**, National Workshop on Crisis in Medical Education – Revision of Regulations, Medical Council of India, New Delhi.

Prof. M. Fahim

- Selected for **ICSU-TWAS-UNESCO Visiting Professorship Programme** sponsored by International Council for Science (ICSU) - The Third World Academy of Science (TWAS) - United Nations Educational, Scientific and Cultural Organization (UNESCO).
- **Member**, Editorial Board, Journal of Applied Physiology, an official publication of the American Physiological Society, U.S.A.
- **Member**, Expert Panel of Australian Heart Foundation for sanctioning Research Grants to Institutions in Australia.
- **Expert Member**, Research Advisory Panel for Defence Institute of Physiology and Allied Sciences, (DIPAS), Delhi.
- **Member** of the steering Committee to monitor progress of the project on "Development of Integrated Software for Quantification of Autonomic Tone" submitted by All India Institute of Medical Sciences (AIIMS), New Delhi.
- **Member**, Academic Council, Jamia Millia Islamia University, New Delhi.
- **External Expert** in the Board of Research Studies, Jamia Millia Islamia University, New Delhi.
- **Expert Panel**, Recruitment and Assessment Centre, Defence Institute of Physiology and Allied Sciences, (DIPAS), Delhi.

Prof. S.N. Gaur

- **Medical Expert**, Rajasthan Public Service Commission, for the Selection Committee for Assistant Professor (TB & Chest Diseases).
- **Editor**, *The Indian Journal of Allergy, Asthma and Applied Immunology*, an official publication of the Indian College of Allergy, Asthma and Applied Immunology.

Prof. S.S. Thukral

- Appointed as the **Convener** for Medical Microbiology Course for M.Sc-Ph.D degree programme of Dr B. R. Ambedkar Centre for Biomedical Research, University of Delhi, Delhi.

Prof. A. Ray

- **Member,** Expert Committee for selection of Professor of Pharmacology at the Aligarh Muslim University, Aligarh.

- **Member,** Expert Committee for selection of senior technical staff, Central Drug Research Institute, Lucknow.

Prof. Mridula Bose

- **Member**, Editorial Board, *The Indian Journal of Chest Diseases and Allied Sciences*, an official publication of the V.P. Chest Institute and the National College of Chest Physicians (India).
- **Secretary**, Indian Association of Medical Microbiologists (Delhi Chapter).

Prof. Ashok Shah

- **Visiting Professor**, University of Mississippi Medical Centre, Jackson, Mississippi, USA.
- **Member**, Scientific Advisory Committee, Indian Council of Medical Research – National Informatics Centre for Biomedical Information, National Informatics Centre, New Delhi.
- **Editor**, *The Indian Journal of Chest Diseases & Allied Sciences*, an official publication of the V.P. Chest Institute and the National College of Chest Physicians (India).
- **Member**, Editorial Board, *The Indian Journal of Tuberculosis*, an official publication of the Tuberculosis Association of India, New Delhi.
- **Member**, Editorial Board, *The Indian Journal of Allergy, Asthma and Applied Immunology*, an official publication of the Indian College of Allergy, Asthma and Applied Immunology.
- **Member**, Editorial Board, *Current Medical Trends*, Jaipur.
- **Member**, National Committee on *" Bibliographic Biomedical Database from Indian Literature"*, National Informatics Centre, New Delhi.
- **Member**, Technical Committee – Lala Ram Swaroop Institute of Tuberculosis and Respiratory Diseases.
- **Joint Secretary**, National College of Chest Physicians (India).
- **Joint Secretary**, Indian College of Allergy, Asthma & Applied Immunology.

Prof. S.K. Chhabra

- **Advisor** on Indoor Air Pollution and Environmental Health, Tata Energy Research Institute (TERI), New Delhi.
- **Member**, Research Advisory Committee, Cipla Research Foundation, Pune.
- **Associate Editor**, *The Indian Journal of Chest Diseases and Allied Sciences*, an official publication of the V.P. Chest Institute and the National College of Chest Physicians (India).
- **Member**, Editorial Board, *The Indian Journal of Allergy, Asthma and Applied Immunology*, an official publication of the Indian College of Allergy, Asthma and Applied Immunology.

Prof. K. Ravi

- **Member**, Governing Body, Lady Hardinge Medical College, New Delhi.

Prof. S.K. Bansal

- **General Secretary**, Biotechnology Society of India.
- **Visiting Professor,** B.P. Koirala Institute of Health Sciences, Dharan, Nepal.
- **Member,** Board of Examiners in Medical Biochemistry for conducting the viva-vioce examination of two Ph.D. candidates in Faculty of Medical Sciences, Chowdhury Charan Singh University, Meerut.

Prof. H.C. Gugnani

- **Best Paper Award**, awarded by the Indian Association of Medical Microbiologists at the 27th National Conference of Indian Association of Medical Microbiologists held in Mumbai (November 6-9, 2003). Title of the paper: Prevalence of *Penicillium marneffei* in bamboo rats in India.
- Elected as the **President,** Society for Indian Human and Animal Mycologists.

Dr Raj Kumar

- **Member**, Editorial Board, *The Indian Journal of Chest Diseases and Allied Sciences*, an official publication of the V.P. Chest Institute and the National College of Chest Physicians (India).
- **Member**, Editorial Board, *The Indian Journal of Allergy, Asthma and Applied Immunology*, an official publication of the Indian College of Allergy, Asthma and Applied Immunology.
- **Associate Editor**, *Journal of Occupational Health and Environmental Medicine* from Indian Association of Occupational Health (Delhi State).

Dr Anuradha Chowdhary

- Awarded the **BOYSCAST Fellowship** by the Department of Science and Technology, Ministry of Science and Technology, Govt. of India, New Delhi from August 2003 - July 2004 at Centers for Disease Control and Prevention, Mycotic Diseases Branch, Division of Bacterial and Mycotic Diseases, Atlanta, GA, U.S.A.

Dr Rajinder Bajaj

- **Member**, Animal Ethics Committee, Dr B.R. Ambedkar Centre for Biomedical Research, University of Delhi, Delhi.
- **Member**, Animal Ethics Committee, Department of Biosciences, Jamia Millia Islamai, New Delhi.
- **Member**, Animal Ethics Committee, Institute of Genomics and Integrative Biology, Delhi.

Dr Ashima Anand

- **Kshanika Oration Award** was received for her outstanding research work on "Cardio-respiratory control mechanisms" from the Indian Council of Medical Research (ICMR), New Delhi.
- Elected to the **Fellowship** of the Third World Academy of Sciences (TWAS), Trieste, Italy.

Prof. H.S. Randhawa

- Re-elected as **Member,** Editorial Board of *Medical Mycology*, bimonthly periodical of International Society for Human & Animal Mycology.

Dr Krishan Gupta (MD Student)

- **Young Scientist Award** was received for his paper entitled "Effect of domiciliary rehabilitation programme on disability in patients with diffuse lung fibrosis" at NAPCON-2003, Coimbatore, November 12-16, 2003.

Dr Amit Dhamija (MD Student)

- **NAPCON-2003 Awards-II Prize** for his paper entitled "Non-invasive ventilation in mild to moderate cases of respiratory failure due to acute exacerbation of chronic obstructive pulmonary disease" at NAPCON-2003, Coimbatore, November 12-16, 2003.

Dr Yogesh Kumar Tyagi (Young Scientist)

- **Young Scientist Award** was received at the occasion of "National Science Day-2004" organized by the Science and Technology Department, Uttar Pradesh Government, Lucknow, February 28, 2004.

Sponsored Research Projects

S. No.	Faculty Member (Department)	Title of Project	Funding Agency, Date of Sanction and Duration	Budget (in Rs.)
1.	Prof. H.G. Raj (Biochemistry)	Discovery of the new enzyme acetoxy drug: Protein transacetylase form lung and liver-studies on isolation, purification and molecular cloning	D.B.T. June 3, 2002 (Three years)	29 Lakhs
2.	Prof. S.K. Bansal (Biochemistry)	Studies on mechanism of signal transduction during release of proinflammatory cytokines IL-1β and TNF-α by alveolar macrophages in asthma	I.C.M.R. November 20, 2001 (Three years)	14.45 Lakhs (Upto two and half years)
3.	Prof. S.K. Chhabra (C.R. Physiology)	Effect of high dietary sodium intake and inhibition of sodium-potassium adenosine triphosphatase on induction of asthma in guinea pigs	D.S.T. July 21, 2000 (Three years)	17.38 Lakhs
4.	Prof. S.K. Chhabra (C.R. Physiology)	Oxidant-antioxidant balance in bronchial asthma: Evaluation of the role of alpha-tocopherol in treatment	I.C.M.R. September 4, 2001 (Two years and three months)	4.47 Lakhs
5.	Prof. S.K. Chhabra (C.R. Physiology)	Potentiation of allergic asthma by air pollution: The ozone-allergen interaction and its modulation by dietary anti-oxidants, alpha-tocopherol and ascorbic acid	I.C.M.R. January 23, 2002	12 Lakhs
6.	Prof. H.C. Gugnani (Medical Mycology)	Studies on epidemiology and aspects of immunodiagnostics of *Penicilliosis marneffei*	I.C.M.R. July 3, 2001 (Two and half years)	6.64 Lakhs
7.	Prof. S.S. Thukral (Microbiology)	Molecular characterization of clinical isolates of *C. diptheriae*	I.C.M.R. September 14, 2001 (Three years)	14.84 Lakhs
8.	Prof. Mridula Bose (Microbiology)	Isolation and molecular characterization of a plasmid from clinical isolates of *Mycobacterium avium intracellulare*	D.S.T. June 12, 2000 (Three years)	18.12 Lakhs
9.	Prof. Mridula Bose (Microbiology)	Analysis of polymorphism and expression profile of genes of the mammalian cell entry (mce) operons in clinical isolates of *M. tuberculosis*	I.C.M.R. March 8, 2002 (Three years)	12.96 Lakhs (Upto IInd year)

S. No.	Faculty Member (Department)	Title of Project	Funding Agency, Date of Sanction and Duration	Budget (in Rs.)
10.	Prof. Mridula Bose (Microbiology)	Mycobacterial-epithelial interaction in innate immune response to tuberculosis and its role in transcriptional regulation of inducible nitric oxide synthase (iNOS)	I.C.M.R. December 5, 2003 (One year)	5 .96 Lakhs
11.	Prof. Mridula Bose (Microbiology)	Analysis of isoniazid and rifampicin resistance mutations in the clinical isolates of *M. tuberculosis* by sequencing and dot-blot hybridization	I.C.M.R. January 8, 2003 (Three years)	6.09 Lakhs (Ist year)
12.	Dr Mandira Varma (Microbiology)	Prevalence of *Mycoplasma pneumoniae* infection in patients of acute exacerbation of COPD: Evaluation by different diagnostic techniques	I.C.M.R. March 12, 2003 (Three years)	4.37 Lakhs (Ist year)
13.	Prof. A. Ray (Pharmacology)	Studies on the possible role of nitric oxide in the regulation of neuro-behavioural and immuno-logical responses during stress	D.S.T. February 16, 2001 (Three years)	17.11 Lakhs
14.	Prof. A. Ray (Pharmacology)	A multicentric, double blind randomized placebo controlled study evaluating the efficacy and tolerability of the polyherbal preparation LL-2123 HP against hepato-toxicity in patients with pulmonary tuberculosis	Lupin Ltd. August 18, 2003 (One year)	0.91 Lakhs
15.	Prof. A. Ray (Pharmacology)	Possible protective role of Livina (a polyherbal preparation) against anti-tubercular therapy (ATT)-induced hepatotoxicity	Dey's Medical Stores Mfg. Ltd. June 6, 2003 (One year)	2.99 Lakhs
16.	Prof. M. Fahim (Physiology)	Effect of simulated high altitude exposure on airway smooth muscle activity : Role of nitric oxide and other epithelium derived factors	D.R.D.O. December 22, 1999 (Upto March 2004)	1.5 Lakhs
17.	Prof. M. Fahim (Physiology)	Arterial baroreflex responses during experimentally induced hypercho-lestterolemia in rabbits	U.G.C. April 18, 2001 (Three years)	6.04 Lakhs
18.	Prof. M. Fahim, Prof. K. Ravi and Dr Vishal Bansal (Physiology)	Establishment of Patch Clamp Lab & Cell Culture Facility under Funds for Improvement in Science and Technology (FIST) programme	D.S.T. February 3, 2003 (Five years)	56.70 Lakhs

S. No.	Faculty Member (Department)	Title of Project	Funding Agency, Date of Sanction and Duration	Budget (in Rs.)
19.	Prof. M. Fahim (Physiology)	Cardio-protective role and mechanism of action of 17 β estradiol in anaesthetized animals	C.S.I. R. May 2, 2003 (Three years)	3.13 Lakhs (Ist year)
20.	Dr V.K. Vijayan (Respiratory Medicine)	Study on prevalence of asthma	I.C.M.R. January 10, 2002 (Two years and two months)	10.43 Lakhs
21.	Dr V.K. Vijayan (Respiratory Medicine)	Prevalence of sleep related breathing disorders in Indian adults	D.S.T. September 11, 2002 (Three years)	10.21 Lakhs
22.	Dr V.K. Vijayan and Dr Raj Kumar (Respiratory Medicine)	Tobacco Cessation Clinic at V.P. Chest Institute during the year 2004 and conducting related activities	W.H.O. February 23, 2004 (One year)	2.14 Lakhs
23.	Prof. S.N. Gaur (Respiratory Medicine)	Clinico-immunologic studies on allergen specific immunotherapy in patients of respiratory allergy	D.S.T. January 16, 2004 (Three years)	5.08 Lakhs
24.	Dr Raj Kumar (Respiratory Medicine)	Studies on foods as sensitizing and inducing factors of allergy disorders with special reference to bronchial asthma	I.C.M.R. December 31, 2001 (Three years)	16.16 Lakhs
25.	Dr Raj Kumar (Respiratory Medicine)	Anti-smoking campaign and intervention against smoking for Delhi University college students	W.H.O. September 27, 2002 (Upto June 2004)	9.40 Lakhs
26.	Dr Raj Kumar (Respiratory Medicine)	Effect of indoor air pollution on respiratory function of children	Ministry of Environment and Forest October 7, 2003 (Three years)	20.97 Lakhs
27.	Dr Madhu Khanna (Respiratory Virology)	Genetic analysis of influenza virus in clinical specimens by rapid molecular techniques	D.S.T. October 1, 2003 (Three years)	18.27 Lakhs
28.	Dr Madhu Khanna (Respiratory Virology)	Study of virological and biochemical regulatory mechanism of influenza virus induced apoptosis in murine model of allergic asthma	C.S.I.R. March 3, 2003 (Three years)	10.19 Lakhs (IInd year)
29.	Dr Sujata K. Dass DST's SERC Fast Track Scheme for Young Scientist (Biochemistry)	Role of meta-alloporphyrins in modulating the malaria induced hemolytic anaemia in mouse model	D.S.T. February 21, 2003 (Three years)	11.70 Lakhs

S. No.	Faculty Member (Department)	Title of Project	Funding Agency, Date of Sanction and Duration	Budget (in Rs.)
30.	Dr Yogesh Kumar Tyagi DST's SERC Fast Track Scheme for Young Scientist (Biochemistry)	Designing substrates specific for the acetoxy drug: Protein transacetylase with a view to target functional proteins	D.S.T. June 12, 2003 (Three years)	11.94 Lakhs
31.	Dr Sadhna Sharma DST's SERC Fast Track Scheme for Young Scientist (Microbiology)	Infection of human monocyte derived macrophages with *M. tuberculosis* induces apoptosis of T cells: A potential mechanism for persistent infection	D.S.T. June 6, 2002 (Three years)	11.64 Lakhs
32.	Mr Sujeet Kumar Junior Res. Fellow *Guide*: Prof.Mridula Bose (Microbiology)	PCR and RFLP typing of the Indian *M. avium* strains using IS1245 insertion sequence marker	C.S.I.R. August 1, 2001 (Five years)	3.03 Lakhs (Upto IIIrd year)
33.	Ms Kavita Gulati Res. Associate *Guide*: Prof. A. Ray (Pharmacology)	Role of free radicals in theophyline induced seizures in experimental animals	C.S.I.R. March, 2002 (Three years)	3.36 Lakhs (IInd year)
34.	Mr Vikram Srivastava Senior Res.Fellow *Guide*: Dr Madhu Khanna (Respiratory Virology)	Role of apoptosis in the patho-genesis of influenza A virus, correlation of virological and immunological parameters: A study in human and murine model	I.C.M.R. September 11, 2003 (Three years)	1.55 Lakhs (Ist year)
35.	Dr Ashima Anand (Principal Scientific Officer) DST Centre for Visceral Mechanisms	Studies on exertional breathless-ness (Under development of practical applications arising from advances in visceral mechanisms i.e. J receptors, chemoreceptors, etc)	I.C.M.R. October 29, 2003 (Three years)	27.26 Lakhs (Ist year)
36.	Prof. H.S. Randhawa (INSA Honorary Scientist)	*In vitro* bio-interactions between *Candida* species, *Aspergillus fumigatus* and some other human pathogenic fungi	I.C.M.R. January 31, 2003 (Three years)	2.09 Lakhs (Ist year)
37.	Prof. H.S. Randhawa (INSA Honorary Scientist)	*Cryptococcus neoformans*: A study of its natural habits, serotypes and reappraisal of selective isolation techniques	I.N.S.A. January 1, 2001	35,000 (per annum)

Orations/Guest Lectures

S. No.	Faculty Member	Title of Lecture	Organiser(s)	Conference, Place and Date
1.	Dr V.K. Vijayan	Severe acute respiratory syndrome	Indian Medical Association (South Delhi Branch) and W.U.S. Centre, Delhi University South Campus	South Campus, Delhi University New Delhi May 6, 2003
2.	Dr V.K. Vijayan	Severe acute respiratory syndrome	National Institute of Science, Technology and Development Studies (CSIR)	Public Lecture 34: Dimensions in Science India International Centre New Delhi May 8, 2003
3.	Dr V.K. Vijayan	Eosinophilic pulmonary disorders in tropics	American Thoracic Society	99th International Conference of American Thoracic Society Seattle, Washington (U.S.A.) May 19, 2003
4.	Dr V.K. Vijayan	Diagnosis and management of interstitial lung diseases	Indira Gandhi Medical College	Pulmonary Medicine Update Shimla June 7-8, 2003
5.	Dr V.K. Vijayan	Flow volume loops	American College of Chest Physicians (South India Chapter)	Chest Meet - 2003 Chennai July 18-20, 2003
6.	Dr V.K. Vijayan	Respiratory viruses with special reference to influenza	National Institute of Communicable Diseases	Symposium on Communicable Diseases: Challenges and Responses on Completion of 40 years of National Institute of Communicable Diseases (NICD: 1963-2003) Delhi August 1-2, 2003

S. No.	Faculty Member	Title of Lecture	Organiser(s)	Conference, Place and Date
7.	Dr V.K. Vijayan	• Smoking cessation: Eastern approach • Health benefits of smoking cessation (Turkish Chapter)	Turkish Society for Respiratory Investigations and American College of Chest Physicians September 2, 2003	17th Asia Pacific Congress on Diseases of the Chest Istanbul, Turkey August 29 –
8.	Dr V.K. Vijayan	Ways to quit smoking Foundation and Cardiological Society of India (Delhi Branch)	All India Heart India International Centre, New Delhi September 28, 2003	World Heart Day
9.	Dr V.K. Vijayan	Chemical inhalation injuries following the Bhopal disaster (ACCP)	American College of Chest Physicians Session of the ACCP Orlando, Florida, U.S.A. October 25-30, 2003	Chest – 2003 the Annual Scientific
10.	Dr V.K. Vijayan	Recent advances in tropical pulmonary medicine (Meet the Professor Session) Chest Society	National College of Chest Physicians (India) and Indian 2003) Coimbatore November 12-16, 2003	National Conference on Pulmonary Diseases (NAPCON-
11.	Dr V.K. Vijayan	• Tuberculosis and HIV infection • Chemical inhalation injuries following the Bhopal disaster	V.P.C.I. University of Delhi and Indian Pharmacological Society	36th Annual Conference of the Indian Pharmacological Society India Habitat Centre, New Delhi December 5-7, 2003
12.	Dr V.K. Vijayan	Eosinophilic lung diseases in the tropics	Indian College of Allergy, Asthma and Applied Immunology	37th National Convention of the Indian College of Allergy, Asthma and Applied Immunology Bangalore December 12-14, 2003
13.	Dr V.K. Vijayan	Diagnostic approaches in sarcoidosis	V.P.C.I. University of Delhi	First Congress of the Indian Association of Sarcoidosis and Other Granulomatous Disorders Delhi January 12, 2004

S. No.	Faculty Member	Title of Lecture	Organiser(s)	Conference, Place and Date
14.	Dr V.K. Vijayan	Recent advances in the management of asthma	Institute of Biomedical Sciences and Pt. Ram Narain Sharma Institute of Ayurveda, Alternate Medical Education & Research, Bundelkhand University, Jhansi, in collaboration with Institute of Pharmacology, Erasmus MC University Medical Centre, the Netherlands	International Conference on Recent Advances in Biochemical and Therapeutic Sciences Jhansi January 13-15, 2004
15.	Dr V.K. Vijayan	Diagnostic approaches in sarcoidosis with special reference to bronchoscopic procedures	King George Medical University and Indian Association for Bronchology	9th National Conference of the Indian Association for Bronchology Lucknow February 27-29, 2004
16.	Dr V.K. Vijayan	Health benefits of smoking cessation	World Assembly on Tobacco Counters Health	3rd World Assembly on Tobacco Counters Health New Delhi March 7-11, 2004
17.	Prof. H.G. Raj	Acetoxy drug - Protein transacetylase: Physiological functions and opportunities for the drug development	Department of Chemistry, University of Delhi and C.S.I.R	International Union of Pure and Applied Chemistry Sponsored Conference on "Biodiversity and Natural Products: Chemistry and Medical Application" Hotel Le Meridian, New Delhi January 26-31, 2004
18.	Prof. M. Fahim	Gen. Amir Chand Oration titled, "Autonomic control of the cardiovascular system"	Mahatma Gandhi Memorial Medical College	42nd Annual Meeting of National Academy of Medical Sciences (India) Indore September 5-7, 2003

S. No.	Faculty Member	Title of Lecture	Organiser(s)	Conference, Place and Date
19.	Prof. M. Fahim	Prof. R.C. Shukla Oration titled, "Neural regulation of cardiovascular systems"	Department of Physiology, King George Medical University	Prof. R.C. Shukla Oration and CME on Cardiovascular System Regulatory Mechanism Update Lucknow September 13, 2003
20.	Prof. M. Fahim	Autonomic control of cardiovascular system	Defense Institute of Physiology and Allied Sciences (DIPAS)	Continuing Education Programme (CEP) Advance Techniques in Biomedical Research Delhi October 13-17, 2003
21.	Prof. M. Fahim	• Cardiovascular sensory receptors • Physiology of pregnancy: Cardiopulmonary and hormonal changes • Cardiac sensory receptors reflexes • EEG in health and disease *(Al Zaiem Al Azhari University)*	International Council for Science (ICSU), The Third World Academy of Science (TWAS) and United Nations Educational, Scientific and Cultural Organization (UNESCO)	ICSU-TWAS-UNESCO Visiting Professorship Programme (*Al Zaiem Al Azhari University* January 24, February 10,14, 19,2004) (*Khartoum University* February 9, 18, 2004)
		• Autonomic control of cardiovascular functions • Cardiovascular effects of carboxylic ionophores *(Khartoum University)*		(*Sudan University of Sciences and Technology, Khartoum* February 11, 18, 2004) (*National Ribat University* February 17, 2004)
		• Medical instrumentation • Bioelectric phenomena in living system *(Sudan University of Sciences and Technology, Khartoum)*		(*University of Juba, Omdurman* February 19, 2004) (*Al Ahfad University for Women's, Omdurman* February 22, 2004)
		• Sensory visceral receptors *(National Ribat University)*		(*International African University* February 22, 2004)

S. No.	Faculty Member	Title of Lecture	Organiser(s)	Conference, Place and Date
		• Neural control of cardiovascular system *(University of Juba, Omdurman)* • Haemodynamic effects of certain cardiotonic agents *(Al Ahfad University for Women's, Omdurman)* • Regulation of blood pressure and blood volume *(International African University)*		
22.	Prof. S.S. Thukral	Molecular characterization of *Mycoplasma pneumoniae*	Indian Association of Mycoplasmologists	VI th Annual Conference of the Indian Association of Mycoplasmologists New Delhi April 26, 2003
23.	Prof. A. Ray	Nitric oxide: In health and disease	Nirma Institute of Pharmaceutical Sciences	Nirma Institute of Pharmaceutical Sciences Nirma University Ahmedabad June 15, 2003
24.	Prof. A. Ray	Nitric oxide: A target molecule for drug development	J.S.S. College of Pharmacy	J.S.S. College of Pharmacy Ooty, Tamil Nadu August 5, 2003
25.	Prof. Mridula Bose	Molecular profile of *Mycobacterium avium intracellulare* Complex of Indian human isolates	Dr B.R. Ambedkar Centre for Biomedical Research, University of Delhi	IV th Annual Symposium on Frontiers in Biomedical Research Delhi April 13-15, 2003
26.	Prof. Mridula Bose	Pathogenicity and virulence of *M. tuberculosis* : Role of genomics	Dr B.R. Ambedkar Centre for Biomedical Research, University of Delhi	Dr B.R. Ambedkar Centre for Biomedical Research Delhi June 7, 2003
27.	Prof. Ashok Shah	Anaerobic lung infections	American College of Chest Physicians (South India Chapter)	Chest Meet - 2003 Chennai July 18-20, 2003

S. No.	Faculty Member	Title of Lecture	Organiser(s)	Conference, Place and Date
28.	Prof. Ashok Shah	• A half a century of allergic bronchopulmonary aspergillosis • Asthma caused by human seminal plasma allergy	University of Mississippi Medical Centre	University of Mississippi Medical Centre, Jackson, Mississippi, U.S. A. September 16-17, 2003
29.	Prof. Ashok Shah	Sarcoidosis in India	Yugoslav Association of Sarcoidosis	4th Annual Meeting of the Association of Sarcoidosis of Serbia and Montenegro Beograd, Serbia October 16, 2003
30.	Prof. Ashok Shah	• Asthma and rhinitis • Aspergillosis and asthma	National College of Chest Physicians (India) and Indian Chest Society	National Conference on Pulmonary Diseases (NAPCON-2003) Coimbatore November 12-16, 2003
31.	Prof. Ashok Shah	Allergic bronchopulmonary and sinus aspergillosis	Indian College of Allergy, Asthma and Applied Immunology	37th National Convention of the Indian College of Allergy, Asthma and Applied Immunology Bangalore December 12-14, 2003
32.	Prof. Ashok Shah	Vikas Arya Memorial Oration titled,"Wheeze and sneeze"	Indian Medical Association (Meerut Branch)	Vikas Arya Memorial Oration Meerut December 19, 2003
33.	Prof. Ashok Shah	Ethnic and geographical differences in the presentation of sarcoidosis	V.P.C.I. University of Delhi	First Congress of the Indian Association of Sarcoidosis and Other Granulomatous Disorders Delhi January 12, 2004
34.	Prof. Ashok Shah	Future developments in COPD	Department of Chest Diseases and Tuberculosis, S.M.S. Medical College, and NAPCON-2002 Trust	An Update on Recent Advances in COPD Jaipur March 14, 2004

S. No.	Faculty Member	Title of Lecture	Organiser(s)	Conference, Place and Date
35.	Prof. S.K. Chhabra	Rational use of antibiotics in hospital-aquired pneumonia	V.P.C.I. University of Delhi and Indian Pharmacological Society	36th Annual Conference of the Indian Pharmacological Society India Habitat Centre, New Delhi December 5-7, 2003
36.	Prof. K.Ravi	Vagal sensory mechanism and pulmonary edema	Defence Institute of Physiology and Allied Sciences, (DIPAS)	Defence Institute of Physiology and Allied Sciences, (DIPAS) Delhi March 10, 2004
37.	Prof. S.K. Bansal	Cytokines and cytokine signaling: An overview	Central JALMA Institute for Leprosy and Society of Immunology and Immunopathology	Third Convention of Society of Immunology and Immunopathology, and National Symposium on Cytokines and Transduction Agra February 13-15, 2004
38.	Dr Madhu Khanna	Immune response and clonal selection	Department of Microbiology, Indian Agriculture Research Institute	Indian Agriculture Research Institute New Delhi September 17-19, 2003
39.	Dr Balakrishnan Menon	Implementation of DOTS	B.J.R.M. Hospital	World TB Day Delhi March 24, 2004
40.	Prof. A.S. Paintal	Society for scientific values	Iranian Congress of Physiology and Pharmacology	16th Iranian Congress of Physiology and Pharmacology Tehran, Iran May 9-12, 2003
41.	Dr A. Anand	Aortic chemoreceptor responses in the combined presence of hypoxia and nicotine	Iranian Congress of Physiology and Pharmacology	16th Iranian Congress of Physiology and Pharmacology Tehran, Iran May 9-12, 2003
42.	Dr A. Anand	Mechanisms underlying movement of drugs across pulmonary capillaries	Department of Physiology	University of Science Bangkok, Thailand November 2, 2003

S. No.	Faculty Member	Title of Lecture	Organiser(s)	Conference, Place and Date
43.	Dr A. Anand	Plasticity of the responsiveness of sensory receptors	Al-Ameen Medical College	XV Annual Conference of the Physiological Society of India Bijapur December 4-6, 2003
44.	Prof. H.S. Randhawa	Ecology of *Cryptococcus neoformans*	Society for Indian Human and Animal Mycologists and Post Graduate Institute of Medical Education and Research	5th National Conference of the Society for Indian Human and Animal Mycologists Chandigarh March 11-14, 2004

Conferences/Symposia/Seminars/Workshops/CMEs

S. No.	Participant	Role/Topic	Organiser(s)	Name, Venue and Date
1.	Dr V.K. Vijayan	Lectures on: • Severe acute respiratory syndrome • Bed side interpretation of arterial blood gases	V.P.C.I. University of Delhi	3rd CME Course in Respiratory Diseases Delhi May 3-4, 2003
2.	Dr V.K. Vijayan	Pulmonary function tests	V.P.C.I. University of Delhi and, Institute of Genomics and Integrative Biology	30th Workshop on Respiratory Allergy: Diagnosis and Management Delhi June 4-10, 2003
3.	Dr V.K. Vijayan	Chaired a scientific session on COPD	Indira Gandhi Medical College	Pulmonary Medicine Update Shimla June 7, 2003
4.	Dr V.K. Vijayan	Chairperson of a scientific session on Smoking - advances in cessation	Turkish Society for Respiratory Investigations and American College of Chest Physicians (Turkish Chapter)	17th Asia Pacific Congress on Diseases of the Chest Istanbul, Turkey August 29 – September 2, 2003
5.	Dr V.K. Vijayan	Moderator of a session on Case presentation	Postgraduate Institute of Medical Education and Research	18th Annual Meeting on Pulmonary and Critical Care Chandigarh October 12, 2003
6.	Dr V.K. Vijayan	Tuberculosis and HIV infection	National Institute of Communicable Diseases	WHO Sponsored Hands on Training Workshop on "Diagnosis and Control of Oppurtunistic Infections in AIDS and other Immunocompromised Patients" Delhi October 13, 2003

S. No.	Participant	Role/Topic	Organiser(s)	Name, Venue and Date
7.	Dr V.K. Vijayan	Pulmonary function tests	Shri Ramachandra Medical College and Research Institute (Deemed University)	National Technical Training Workshop on Diagnosis, Management and Medical Surveillance of Pneumoconiosis and other Related Lung Diseases Chennai October 14, 2003
8.	Dr V.K. Vijayan	• Participated in the Council of International Regents and Governors Meeting as an International Regent for India • Participated in a panel discussion on Medical problems following disasters: The evolving aftermath	American College of Chest Physicians (ACCP)	Chest – 2003 the Annual Scientific Session of the ACCP Orlando, Florida, U.S.A. October 25-30, 2003
9.	Dr V.K. Vijayan	• Chairperson of the workshop on Pulmonary function tests and exercise physiology • Chairperson of the scientific session on Clinical pearls for the chest physicians	National College of Chest Physicians (India) and Indian Chest Society	National Conference on Pulmonary Diseases (NAPCON-2003) Coimbatore November 12-16, 2003
10.	Dr V.K. Vijayan	Lecture on: Management of tuberculosis and multidrug resistant tuberculosis at secondary care hospitals	Delhi Society for Promotion of Rational Use of Drugs and WHO India EDP at Maulana Azad Medical College	CME in Rational Use of Drugs New Delhi November 21,2003
11.	Dr V.K. Vijayan	Chairperson of a scientific session on Rational drug therapy in TB	V.P.C.I. University of Delhi and Indian Pharmacological Society	36th Annual Conference of the Indian Pharma-cological Society India Habitat Centre, New Delhi December 5-7, 2003

S. No.	Participant	Role/Topic	Organiser(s)	Name, Venue and Date
12.	Dr V.K. Vijayan	• Chaired a scientific session on Nanotechnology • Demonstration of Bronchoalveolar lavage	V.P.C.I. University of Delhi and Department of Science and Technology, Govt. of India	Workshop cum Training Programme on New Perspectives in Drug Discovery and Development Delhi December 8-9, 2003
13.	Dr V.K. Vijayan	Chaired a scientific session on Recent advances in therapy of asthma	Institute of Biomedical Sciences and Pt. Ram Narain Sharma Institute of Ayurveda, Alternate Medical Education & Research, Bundelkhand University, Jhansi, in collaboration with Institute of Pharmacology, Erasmus MC University Medical Centre, the Netherlands	International Conference on Recent Advances in Biochemical and Therapeutic Sciences Jhansi January 13-15, 2004
14.	Dr V.K. Vijayan	Chaired a scientific session on Tuberculosis	Department of Medicine, A.I.I.M.S.	Medicine Update New Delhi February 1, 2004
15.	Dr V.K. Vijayan	Chaired a scientific session on Bronchoscopy	King George Medical University and Indian Association for Bronchology	9th National Conference of the Indian Association for Bronchology Lucknow February 27-29, 2004
16.	Dr V.K. Vijayan	Chaired a scientific session on Smoking cessations	World Assembly on Tobacco Counters Health	3rd World Assembly on Tobacco Counters Health New Delhi March 7-11, 2004
17.	Prof. H.G. Raj	Presented a paper on Novel natural products: Studies leading to discovery of a new biochemical pathway	University of Mauritius in collaboration with University of Delhi	Bioresources Towards Drug Discovery and Development Reduit, Mauritius February 3-4, 2004
18.	Prof. M. Fahim	Presented a paper on Mechanism of certain inherited cardiovascular disorders	Manipal Academy of Higher Education and Alexander von Humboldt Foundation (Germany)	International Symposium on Genetic and Human Health Manipal October 29-31, 2003

S. No.	Participant	Role/Topic	Organiser(s)	Name, Venue and Date
19.	Prof. M. Fahim	Presented a paper on Autonomic control of cardiovascular system	Al-Ameen Medical College	XV Annual Conference of the Physiological Society of India Bijapur December 4-6, 2003
20.	Prof. M. Fahim	Presented a paper on Cardioprotective role of 'Lipotab' in animal model of atherosclerosis	D.S.T. and Jamia Hamdard	National Workshop on Institute-Industry Interaction on Research in Unani Medicine to Identify Areas of Collaboration New Delhi January 7-9, 2004
21.	Prof. M.K. Agarwal	• Basic immune response with special reference to Type I and Type III hypersensitivity disorders • Allergy to common Indian insects • An overview of various techniques of performance and grading of skin tests. Followed by demonstration of intradermal and skin prick tests	V.P.C.I. University of Delhi and, Institute of Genomics and Integrative Biology	30th Workshop on Respiratory Allergy: Diagnosis and Management Delhi June 4-10, 2003
22.	Prof. S.N. Gaur	Chairperson of a scientific session on Asthma, MDR-TB and hemoptysis	V.P.C.I. University of Delhi	3rd CME Course in Respiratory Diseases Delhi May 3-4, 2003
23.	Prof. S.N. Gaur	• Chairperson of a scientific session on Asthma • Chairperson of the Award session • Chairperson of the Clinical case presentation • Chairperson of the satellite symposium on Bronchial asthma and COPD	National College of Chest Physicians (India) and Indian Chest Society	National Conference on Pulmonary Diseases (NAPCON-2003) Coimbatore November 12-16, 2003

S. No.	Participant	Role/Topic	Organiser(s)	Name, Venue and Date
24.	Prof. S.N. Gaur	Chairperson of a scientific session on Diabetes	V.P.C.I. University of Delhi and Indian Pharmacological Society	36th Annual Conference of the Indian Pharmacological Society India Habitat Centre, New Delhi December 5-7, 2003
25.	Prof. S.N. Gaur	Chairperson of a scientific session on Asthma	Indian College of Allergy, Asthma and Applied Immunology	37th National Convention of the Indian College of Allergy, Asthma and Applied Immunology Bangalore December 12-14, 2003
26.	Prof. S.N. Gaur	Chairperson of a scientific session on Sarcoidosis	V.P.C.I. University of Delhi	First Congress of the Indian Association of Sarcoidosis and Other Granulomatous Disorders Delhi January 12, 2004
27.	Prof. S.N. Gaur	Chairperson of a scientific session on Choices of antibiotics for infection in the I.C.U.	Department of Medicine, A.I.I.M.S.	Medicine Update New Delhi February 1, 2004
28.	Prof. S.N. Gaur	Chairperson of a scientific session on Asthma	King George Medical University and Indian Association for Bronchology	9th National Conference of the Indian Association for Bronchology Lucknow February 27-29, 2004
29.	Prof. S.S. Thukral	Presented a paper on Comparative evaluation of ribotyping and SDS-PAGE whole cell protein profiling analysis for typing clinical isolates of *C. diphtheriae*	Indian Association of Medical Microbiologists	27th National Conference of Indian Association of Medical Microbiologists Mumbai November 6-9, 2003
30.	Prof. Ashok Shah	Chaired a session on Diagnosis of tuberculosis	V.P.C.I. University of Delhi	National Symposium on Global Challenges in TB: An Update on the occasion of the 54th Foundation Day Celebrations of the V.P.C.I. Delhi April 6, 2003

S. No.	Participant	Role/Topic	Organiser(s)	Name, Venue and Date
31.	Prof. Ashok Shah	Lectures on: • Diagnosis and management of COPD • Rhinitis Chaired a session on 'SARS' and 'Pulmonary rehabilitation'	V.P.C.I. University of Delhi	3rd CME Course in Respiratory Diseases Delhi May 3-4, 2003
32.	Prof. Ashok Shah	Lectures on: • Allergic rhinitis: Diagnosis and management • Self-management and patient education in bronchial asthma • Allergic broncho-pulmonary aspergillosis	V.P.C.I. University of Delhi and, Institute of Genomics and Integrative Biology	30th Workshop on Respiratory Allergy: Diagnosis and Management Delhi June 4-10, 2003
33.	Prof. Ashok Shah	• Chaired a session on Occupational asthma • Oral presentation on Assessment of sensory perceptions and preference to intranasal corticosteroid sprays in patients with allergic rhinitis in Delhi Poster presentations on • Allergic broncho-pulmonary aspergillosis: A review from India • Allergic rhinitis in Delhi: A comparative profile of 'sneezers and runners' and 'blockers'	International Congress of Allergology and Clinical Immunology	World Allergy Organization Congress – XVIII International Congress of Allergology and Clinical Immunology Vancouver, Canada September 7-12, 2003

S. No.	Participant	Role/Topic	Organiser(s)	Name, Venue and Date
34.	Prof. Ashok Shah	Lecture on: Sneeze and wheeze	Indian Academy of Pediatrics (Himachal Pradesh Branch)	CME on Respiratory Allergy Dharamsala November 1, 2003
35.	Prof. Ashok Shah	• Participated in a panel discussion on Publication ethics • Chaired a session on Rational drug therapy in tuberculosis	V.P.C.I. University of Delhi and Indian Pharmacological Society	36th Annual Conference of the Indian Pharmacological Society India Habitat Centre, New Delhi December 5-7, 2003
36.	Prof. Ashok Shah	Chaired Scientific Session III • Immunotherapy in allergic diseases • Genetic, environment and cancer	Indian College of Allergy, Asthma and Applied Immunology	37th National Convention of the Indian College of Allergy, Asthma and Applied Immunology Bangalore December 12-14, 2003
37.	Prof. Ashok Shah	Chaired a session on Asthma and allergic rhinitis: Two sides of the same coin	Department of Medicine, A.I.I.M.S.	Medicine Update New Delhi February 1, 2004
38.	Prof. S.K. Chhabra	Lectures on: • Oxygen therapy • Pulmonary function tests	V.P.C.I. University of Delhi	3rd CME Course in Respiratory Diseases Delhi May 3-4, 2003
39.	Prof. S.K. Chhabra	Lectures on: • Epidemiology and pharmacological treatment of bronchial asthma • Pulmonary function testing (Lecture-cum-demonstration) • Management of asthma in special situations	V.P.C.I. University of Delhi and, Institute of Genomics and Integrative Biology	30th Workshop on Respiratory Allergy: Diagnosis and Management Delhi June 4-10, 2003

S. No.	Participant	Role/Topic	Organiser(s)	Name, Venue and Date
40.	Prof. S.K. Chhabra	Chaired a scientific session on Clinical pharmacology	V.P.C.I. University of Delhi and Indian Pharmacological Society	36th Annual Conference of the Indian Pharmacological Society India Habitat Centre, New Delhi December 5-7, 2003
41.	Prof. S.K. Bansal	Chaired a scientific session on childhood asthma and smoking cessation	V.P.C.I. University of Delhi	3rd CME Course in Respiratory Diseases Delhi May 3-4, 2003
42.	Prof. S.K. Bansal	Chaired a scientific session on Cytokines and signal transduction	Central JALMA Institute for Leprosy and Society of Immunology and Immunopathology	Third Convention of Society of Immunology and Immunopathology, and National Symposium on Cytokines and Signal Transduction Agra February 13-15, 2004
43.	Prof. H.C. Gugnani	Chaired a scientific session on Clinical trials: Ethical and laboratory issues Presented papers on • Prevalence of *Penicillium marneffei* in bamboo rats in India • Onychomycosis due to *Emericella quadrilinneata*	Indian Association of Medical Microbiologists	27th National Conference of Indian Association of Medical Microbiologists Mumbai November 6-9, 2003
44.	Prof. H.C. Gugnani	• Presented a paper on Emerging dimorphic fungi • Chaired a scientific session on Immunology of mycoses	Society for Indian Human and Animal Mycologists and Post Graduate Institute of Medical Education and Research	5th National Conference of the Society for Indian Human and Animal Mycologists Chandigarh March 11-14, 2004

S. No.	Participant	Role/Topic	Organiser(s)	Name, Venue and Date
45.	Dr Raj Kumar	Lecture on: Inhalation therapy in bronchial asthma	V.P.C.I. University of Delhi	3rd CME Course in Respiratory Diseases Delhi May 3-4, 2003
46.	Dr Raj Kumar	Lecture on: Food allergy including G.M. food	V.P.C.I. University of Delhi and, Institute of Genomics and Integrative Biology	30th Workshop on Respiratory Allergy: Diagnosis and Management Delhi June 4-10, 2003
47.	Dr Raj Kumar	Presented a paper on Other radiological features in allergic bronchopulmonary aspergillosis and its serological and clinical evaluation	European Academy of Allergology and Clinical Immunology	XXII Congress of European Academy of Allergology and Clinical Immunology Paris, France June 7-11, 2003
48.	Dr Raj Kumar	Presented a paper on Assessment of sustained release Bupropion and intensive physician advice in smoking cessation	National College of Chest Physicians (India) and Indian Chest Society	National Conference on Pulmonary Diseases (NAPCON-2003) Coimbatore November 12-16, 2003
49.	Dr Raj Kumar	Chaired a scientific session on Role of chloroquine in management of sarcoidosis	V.P.C.I. University of Delhi	First Congress of the Indian Association of Sarcoidosis and Other Granulomatous Disorders Delhi January 12, 2004
50.	Dr Raj Kumar	Presented a paper on Airway obstruction in rhinitis	American Academy of Allergy, Asthma and Immunology, American College of Chest Physicians, American Thoracic Society Asian Pacific Society of Respirology European Respiratory Society, Global Initiative for Asthma, and International Union Against Tuberculosis and Lung Disease	4th World Asthma Meeting Bangkok, Thailand February 16-19, 2004

S. No.	Participant	Role/Topic	Organiser(s)	Name, Venue and Date
51.	Dr Raj Kumar	Presented a paper on Breath carbon monoxide concentration in cigarette and bidi smokers	World Assembly on Tobacco Counters Health	3rd World Assembly on Tobacco Counters Health New Delhi March 7-11, 2004
52.	Dr Mandira Varma	CME Lecture on: Emerging trends in mycoplasma presentation: Role of *Mycoplasma Pneumoniae* in acute exacerbation of COPD	Indian Association of Mycoplasmologists	VI th Conference of the Indian Association of Mycoplasmologists New Delhi April 26, 2003
53.	Dr Mandira Varma	Presented a paper on Rapid real-time detection of rifampicin resistance in *M. tuberculosis* isolates from Delhi	Indian Association of Medical Microbiologists	27th National Conference of Indian Association of Medical Microbiologists Mumbai November 6-9, 2003
54.	Dr Mandira Varma	Lecture on: Rapid detection of rifampicin resistance in *M. tuberculosis* isolates	Central JALMA Institute for Leprosy	ICMR-INSERM Workshop on Tuberculosis Agra December 12-14, 2003
55.	Dr Balakrishnan Menon	Lecture on: Pulmonary radiology	V.P.C.I. University of Delhi	3rd CME Course in Respiratory Diseases Delhi May 3-4, 2003
56.	Dr Balakrishnan Menon	Lecture on: Radiology of interstitial and immunological diseases	V.P.C.I. University of Delhi and, Institute of Genomics and Integrative Biology	30th Workshop on Respiratory Allergy: Diagnosis and Management Delhi June 4-10, 2003
57.	Dr Rajinder Bajaj	Participated in a discussion on Ethics in animal experimentation	Ranbaxy Science Foundation, Gurgaon	13th Round Table Conference on Ethics in Animal Experimentation India Habitat Centre, New Delhi January 10, 2004

S. No.	Participant	Role/Topic	Organiser(s)	Name, Venue and Date
58.	Prof. A.S. Paintal	Chairperson of a scientific session on Development of medical technology	All India Institute of Medical Sciences	Baldev Singh Workshop on Non-invasive Measurement of Peripheral Blood Flow and Cardic Output 'An AIIMS-BARC Initiative' New Delhi April 15-17, 2003
59.	Dr A. Anand	Panel discussion on Developing our own electrodiagnostic technologies	All India Institute of Medical Sciences	Baldev Singh Workshop on Non-invasive Measurement of Peripheral Blood Flow and Cardic Output 'An AIIMS-BARC Initiative' New Delhi April 15-17, 2003
60.	Prof. H.S. Randhawa	Chaired the session of Dr M.J. Thirumalachar memorial lecture	Society for Indian Human and Animal Mycologists and Post Graduate Institute of Medical Education and Research	5th National Conference of the Society for Indian Human and Animal Mycologists Chandigarh March 11-14, 2004
61.	Dr N.K. Dogra (MD Student) *Guides: Prof. K. Ravi and Dr V. K. Vijayan*	Presented a poster on Passive smoking and respiratory systems in children	National Public Health Institute and Cancer Society of Finland	12th World Congress on Tobacco or Health Helsinki, Finland August 3-8, 2003
62.	Dr Amit Dhamija (MD Student) *Guide: Dr V. K. Vijayan*	Presented a paper on Non-invasive ventilation in mild to moderate cases of respiratory failure due to acute exacerbation of chronic obstructive pulmonary disease	National College of Chest Physicians (India) and Indian Chest Society	National Conference on Pulmonary Diseases (NAPCON-2003) Coimbatore November 12-16, 2003
63.	Mrs Sujata Upadhyay (PhD Student) *Guides: Prof. K. Ravi and Prof. S.K. Chhabra*	Presented a poster on Effect of *in vivo* generation of reactive oxygen species on airway reactivity and oxidant-antioxidant balance in guinea pigs	V.P.C.I. University of Delhi and Indian Pharmacological Society	36th Annual Conference of the Indian Pharmacological Society India Habitat Centre, New Delhi December 5-7, 2003

S. No.	Participant	Role/Topic	Organiser(s)	Name, Venue and Date
64.	Mrs Sujata Upadhyay (PhD Student) *Guides: Prof. K. Ravi and Prof. S.K. Chhabra*	Impairment of beta – adrenergic responses by *in vivo* generation of reactive oxygen species	Guwahati Medical College and The Association of Physiologists and Pharmacologists of India	APPICON-2003, Annual Conference of the Association of Physiologists and Pharmacologists of India Guwahati December 18-20, 2003
65.	Mr Ahmad Nadeem (PhD Student) *Guides: Prof. H.G. Raj and Prof. S.K. Chhabra*	Presented a paper on Increased oxidative stress and altered levels of antioxidants in acute exacerbations of asthma	American Academy of Allergy, Asthma and Immunology, American College of Chest Physicians, American Thoracic Society, Asian Pacific Society of Respirology, European Respiratory Society, Global Initiative for Astma, and International Union Against Tuberculosis and Lung Disease	4th World Asthma Meeting Bangkok, Thailand February 16-19, 2004
66.	Dr Shweta Rawall *Guides: Dr Madhu Khanna and Dr V.K. Vijayan*	Presented a paper on Induction of programmed cell death (apoptosis) by influenza A virus infection in HeLa cells	Indian Immunology Society	30th Annual Conference of Indian Immunology Society Lucknow November 23-25, 2003
67.	Ms Prakriti Srivastava (Junior Res. Fellow) *Guide: Dr Raj Kumar*	Presented papers on • Allergy to rice in Indian population • Banana sensitization in patients of respiratory illness including bronchial asthma	Indian College of Allergy, Asthma and Applied Immunology	37th National Convention of the Indian College of Allergy, Asthma and Applied Immunology Bangalore December 12-14, 2003

Participation in Organising of Conferences/Symposia/ Seminars/Workshops/CMEs

S. No.	Faculty Member	Associated As	Organiser(s)	Conference, Place and Date
1.	Dr V.K. Vijayan	Organising Chairman	V.P.C.I. University of Delhi	National Symposium on Global Challenges in TB: An Update on the occasion of the 54th Foundation Day Celebrations of the V.P.C.I. Delhi April 6, 2003
2.	Dr V.K. Vijayan	Member, Advisory Committee	Dr B.R. Ambedkar Centre for Biomedical Research, University of Delhi	IVth Annual Symposium on Frontiers in Biomedical Research Delhi April 13-15, 2003
3.	Dr V.K. Vijayan	Organising Chairman	V.P.C.I. University of Delhi	3rd CME Course in Respiratory Diseases Delhi May 3-4, 2003
4.	Dr V.K. Vijayan	Member, ACCP Committee	American College of Chest Physicians (South India Chapter)	Chest Meet - 2003 Chennai July 18-20, 2003
5.	Dr V.K. Vijayan	Member, International Advisory Board	Turkish Society for Respiratory Investigations and American College of Chest Physicians (Turkish Chapter)	17th Asia Pacific Congress on Diseases of the Chest Istanbul, Turkey August 29 – September 2, 2003
6.	Dr V.K. Vijayan	Organising Chairman	V.P.C.I. University of Delhi and Indian Pharmacological Society	36th Annual Conference of the Indian Pharmacological Society India Habitat Centre, New Delhi December 5-7, 2003
7.	Dr V.K. Vijayan	Organising Chairman	V.P.C.I. University of Delhi and Department of Science and Technology, Govt. of India	Workshop cum Training Programme on New Perspectives in Drug Discovery and Development Delhi December 8-9, 2003

S. No.	Faculty Member	Associated As	Organiser(s)	Conference, Place and Date
8.	Dr V.K. Vijayan	Organising Chairman	V.P.C.I. University of Delhi	First Congress of the Indian Association of Sarcoidosis and Other Granulomatous Disorders Delhi January 12, 2004
9.	Dr V.K. Vijayan	Member, National Advisory Committee	King George Medical University and Indian Association for Bronchology	9th National Conference of the Indian Association for Bronchology Lucknow February 27-29, 2004
10.	Prof. H.G. Raj	Member, Organising Committee	Department of Chemistry, University of Delhi and C.S.I.R	International Union of Pure and Applied Chemistry Sponsored Conference on "Biodiversity and Natural Products: Chemistry and Medical Application Hotel Le Meridian, New Delhi January 26-31, 2004
11.	Prof. S.N. Gaur	Member, Organising Committee	V.P.C.I. University of Delhi	National Symposium on Global Challenges in TB: An Update on the occasion of the 54th Foundation Day Celebrations of the V.P.C.I. Delhi April 6, 2003
12.	Prof. S.N. Gaur	• National Advisor • Member, Organising Committee	National College of Chest Physicians (India) and Indian Chest Society	National Conference on Pulmonary Diseases (NAPCON-2003) Coimbatore November 12-16, 2003
13.	Prof. S.N. Gaur	Member, Organising Committee	V.P.C.I. University of Delhi and Indian Pharmacological Society	36th Annual Conference of the Indian Pharmacological Society India Habitat Centre, New Delhi December 5-7, 2003
14.	Prof. S.N. Gaur	Member, Organising Committee	Indian College of Allergy, Asthma and Applied Immunology	37th National Convention of the Indian College of Allergy, Asthma and Applied Immunology Bangalore December 12-14, 2003

S. No.	Faculty Member	Associated As	Organiser(s)	Conference, Place and Date
15.	Prof. S.N. Gaur	Member, Organising Committee	V.P.C.I. University of Delhi	First Congress of the Indian Association of Sarcoidosis and Other Granulomatous Disorders Delhi January 12, 2004
16.	Prof. A. Ray	Organising Secretary	V.P.C.I. University of Delhi and Indian Pharmacological Society	36th Annual Conference of the Indian Pharmacological Society India Habitat Centre, New Delhi December 5-7, 2003
17.	Prof. A. Ray	Organising Secretary	V.P.C.I. University of Delhi and Department of Science and Technology, Govt. of India	Workshop cum Training Programme on New Perspectives in Drug Discovery and Development Delhi December 8-9, 2003
18.	Prof. Mridula Bose	Organising Secretary	V.P.C.I. University of Delhi	National Symposium on Global Challenges in TB: An Update on the occasion the 54th Foundation Day Celebrations of the V.P.C.I. Delhi April 6, 2003
19.	Prof. Ashok Shah	Member, Organising Committee	V.P.C.I. University of Delhi	National Symposium on Global Challenges in TB: An Update on the occasion of the 54th Foundation Day Celebrations of the V.P.C.I. Delhi April 6, 2003
20.	Prof. Ashok Shah	Member, Organising Committee	V.P.C.I. University of Delhi	3rd CME Course in Respiratory Diseases Delhi May 3-4, 2003
21.	Prof. Ashok Shah	Member, Scientific Committee	V.P.C.I. University of Delhi and, Institute of Genomics and Integrative Biology	30th Workshop on Respiratory Allergy: Diagnosis and Management Delhi June 4-10, 2003

S. No.	Faculty Member	Associated As	Organiser(s)	Conference, Place and Date
22.	Prof. Ashok Shah	Member, Organising Committee	V.P.C.I. University of Delhi and Indian Pharmacological Society	36th Annual Conference of the Indian Pharmacological Society India Habitat Centre, New Delhi December 5-7, 2003
23.	Prof. Ashok Shah	Organising Secretary	V.P.C.I. University of Delhi	First Congress of the Indian Association of Sarcoidosis and Other Granulomatous Disorders Delhi January 12, 2004
24.	Prof. S.K. Chhabra	Member, Organising Committee	V.P.C.I. University of Delhi	National Symposium on Global Challenges in TB: An Update on the occasion of the 54th Foundation Day Celebrations of the V.P.C.I. Delhi April 6, 2003
25.	Prof. S.K. Chhabra	Member, Organising Committee	V.P.C.I. University of Delhi	3rd CME Course in Respiratory Diseases Delhi May 3-4, 2003
26.	Prof. S.K. Chhabra	Member, Organising Committee	V.P.C.I. University of Delhi and Indian Pharmacological Society	36th Annual Conference of the Indian Pharmacological Society India Habitat Centre, New Delhi December 5-7, 2003
27.	Prof. S.K. Chhabra	Member, Organising Committee	V.P.C.I. University of Delhi	First Congress of the Indian Association of Sarcoidosis and Other Granulomatous Disorders Delhi January 12, 2004
28.	Prof. K. Ravi	Treasurer	V.P.C.I. University of Delhi	National Symposium on Global Challenges in TB: An Update on the occasion of the 54th Foundation Day Celebrations of the V.P.C.I. Delhi April 6, 2003

S. No.	Faculty Member	Associated As	Organiser(s)	Conference, Place and Date
29.	Prof. K. Ravi	Member, Organising Committee	V.P.C.I. University of Delhi	3rd CME Course in Respiratory Diseases Delhi May 3-4, 2003
30.	Prof. K. Ravi	Treasurer	V.P.C.I. University of Delhi and Indian Pharmacological Society	36th Annual Conference of the Indian Pharmacological Society India Habitat Centre, New Delhi December 5-7, 2003
31.	Prof. K. Ravi	Treasurer	V.P.C.I. University of Delhi and Department of Science and Technology, Govt. of India	Workshop cum Training Programme on New Perspectives in Drug Discovery and Development Delhi December 8-9, 2003
32.	Prof. K. Ravi	Treasurer	V.P.C.I. University of Delhi	First Congress of the Indian Association of Sarcoidosis and Other Granulomatous Disorders Delhi January 12, 2004
33.	Prof. S.K. Bansal	Member, Organising Committee	V.P.C.I. University of Delhi	National Symposium on Global Challenges in TB: An Update on the occasion of the 54th Foundation Day Celebrations of the V.P.C.I. Delhi April 6, 2003
34.	Prof. S.K. Bansal	Member, Organising Committee	V.P.C.I. University of Delhi	3rd CME Course in Respiratory Diseases Delhi May 3-4, 2003
35.	Prof. S.K. Bansal	Member, Organising Committee	V.P.C.I. University of Delhi and Indian Pharmacological Society	36th Annual Conference of the Indian Pharmacological Society India Habitat Centre, New Delhi December 5-7, 2003

S. No.	Faculty Member	Associated As	Organiser(s)	Conference, Place and Date
36.	Prof. S.K. Bansal	Member, Organising Committee	V.P.C.I. University of Delhi	First Congress of the Indian Association of Sarcoidosis and Other Granulomatous Disorders Delhi January 12, 2004
37.	Prof. H.C. Gugnani	Member, Organising Committee	V.P.C.I. University of Delhi	National Symposium on Global Challenges in TB: An Update on the occasion of the 54th Foundation Day Celebrations of the V.P.C.I. Delhi April 6, 2003
38.	Prof. H.C. Gugnani	Member, Organising Committee	V.P.C.I. University of Delhi	3rd CME Course in Respiratory Diseases Delhi May 3-4, 2003
39.	Prof. H.C. Gugnani	Member, Organising Committee	V.P.C.I. University of Delhi and Indian Pharmacological Society	36th Annual Conference of the Indian Pharmacological Society India Habitat Centre, New Delhi December 5-7, 2003
40.	Prof. H.C. Gugnani	Member, Organising Committee	V.P.C.I. University of Delhi	First Congress of the Indian Association of Sarcoidosis and Other Granulomatous Disorders Delhi January 12, 2004
41.	Dr Raj Kumar	Member, Organising Committee	V.P.C.I. University of Delhi	National Symposium on Global Challenges in TB: An Update on the occasion of the 54th Foundation Day Celebrations of the V.P.C.I. Delhi April 6, 2003
42.	Dr Raj Kumar	Organising Secretary	V.P.C.I. University of Delhi	3rd CME Course in Respiratory Diseases Delhi May 3-4, 2003

S. No.	Faculty Member	Associated As	Organiser(s)	Conference, Place and Date
43.	Dr Raj Kumar	Member, Organising Committee	National College of Chest Physicians (India) and Indian Chest Society	National Conference on Pulmonary Diseases (NAPCON-2003) Coimbatore November 12-16, 2003
44.	Dr Madhu Khanna	Member, Organising Committee	V.P.C.I. University of Delhi	National Symposium on Global Challenges in TB: An Update on the occasion of the 54th Foundation Day Celebrations of the V.P.C.I. Delhi April 6, 2003
45.	Dr Madhu Khanna	Member, Organising Committee	V.P.C.I. University of Delhi and Indian Pharmacological Society	Pre-Conference Workshop of 36th Annual Conference of Indian Pharmacological Society on 'Pharmacology Today Progressing Academia-Industry Interactions' Delhi December 4, 2003
46.	Dr Madhu Khanna	Member, Organising Committee	V.P.C.I. University of Delhi and Indian Pharmacological Society	36th Annual Conference of the Indian Pharmacological Society India Habitat Centre, New Delhi December 5-7, 2003
47.	Dr Madhu Khanna	Member, Organising Committee	V.P.C.I. University of Delhi	First Congress of the Indian Association of Sarcoidosis and Other Granulomatous Disorders Delhi January 12, 2004
48.	Dr Vishwajeet Rohil	Member, Organising Committee	V.P.C.I. University of Delhi	National Symposium on Global Challenges in TB: An Update on the occasion of the 54th Foundation Day Celebrations of the V.P.C.I. Delhi April 6, 2003
49.	Dr Vishwajeet Rohil	Member, Organising Committee	V.P.C.I. University of Delhi	3rd CME Course in Respiratory Diseases Delhi May 3-4, 2003

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50.	Dr Vishwajeet Rohil	Member, Organising Committee	V.P.C.I. University of Delhi and Indian Pharmacological Society	36th Annual Conference of the Indian Pharmacological Society India Habitat Centre, New Delhi December 5-7, 2003
51.	Dr Vishwajeet Rohil	Member, Organising Committee	V.P.C.I. University of Delhi	First Congress of the Indian Association of Sarcoidosis and Other Granulomatous Disorders Delhi January 12, 2004
52.	Dr Vishal Bansal	Member, Organising Committee	V.P.C.I. University of Delhi	National Symposium on Global Challenges in TB: An Update on the occasion of the 54th Foundation Day Celebrations of the V.P.C.I. Delhi April 6, 2003
53.	Dr Vishal Bansal	Member, Organising Committee	V.P.C.I. University of Delhi	3rd CME Course in Respiratory Diseases Delhi May 3-4, 2003
54.	Dr Vishal Bansal	Member, Organising Committee	V.P.C.I. University of Delhi and AD Instruments, Australia	Workshop cum Demonstration on Powerlab in Life Sciences Teaching and Research Delhi November 10, 2003
55.	Dr Vishal Bansal	Member, Organising Committee	V.P.C.I. University of Delhi and Indian Pharmacological Society	Pre-Conference Workshop of 36th Annual Conference of Indian Pharmacological Society on 'Pharmacology Today Progressing Academia-Industry Interactions' Delhi December 4, 2003
56.	Dr Vishal Bansal	Member, Organising Committee	V.P.C.I. University of Delhi and Indian Pharmacological Society	36th Annual Conference of the Indian Pharmacological Society India Habitat Centre, New Delhi December 5-7, 2003

S. No.	Faculty Member	Associated As	Organiser(s)	Conference, Place and Date
57.	Dr Vishal Bansal	Member, Organising Committee	V.P.C.I. University of Delhi	First Congress of the Indian Association of Sarcoidosis and Other Granulomatous Disorders Delhi January 12, 2004
58.	Dr Balakrishnan Menon	Member, Organising Committee	V.P.C.I. University of Delhi	National Symposium on Global Challenges in TB: An Update on the occasion of the 54th Foundation Day Celebrations of the V.P.C.I. Delhi April 6, 2003
59.	Dr Balakrishnan Menon	Member, Organising Committee	V.P.C.I. University of Delhi	3rd CME Course in Respiratory Diseases Delhi May 3-4, 2003
60.	Dr Balakrishnan Menon	Member, Organising Committee	V.P.C.I. University of Delhi and, Institute of Genomics and Integrative Biology	30th Workshop on Respiratory Allergy: Diagnosis and Management Delhi June 4-10, 2003
61.	Dr Balakrishnan Menon	Member, Organising Committee	V.P.C.I. University of Delhi and Indian Pharmacological Society	36th Annual Conference of the Indian Pharmacological Society India Habitat Centre, New Delhi December 5-7, 2003
62.	Dr Balakrishnan Menon	Member, Organising Committee	V.P.C.I. University of Delhi	First Congress of the Indian Association of Sarcoidosis and Other Granulomatous Disorders Delhi January 12, 2004
63.	Dr Mujeeb-ur-Rahman	Member, Organising Committee	V.P.C.I. University of Delhi	National Symposium on Global Challenges in TB: An Update on the occasion of the 54th Foundation Day Celebrations of the V.P.C.I. Delhi April 6, 2003

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64.	Dr Mujeeb-ur-Rahman	Member, Organising Committee	V.P.C.I. University of Delhi	3rd CME Course in Respiratory Diseases Delhi May 3-4, 2003
65.	Dr Mujeeb-ur-Rahman	Member, Organising Committee	V.P.C.I. University of Delhi and, Institute of Genomics and Integrative Biology	30th Workshop on Respiratory Allergy: Diagnosis and Management Delhi June 4-10, 2003
66.	Dr Mujeeb-ur-Rahman	Member, Organising Committee	V.P.C.I. University of Delhi and Indian Pharmacological Society	Pre-Conference Workshop of 36th Annual Conference of Indian Pharmacological Society on 'Pharmacology Today Progressing Academia-Industry Interactions' Delhi December 4, 2003
67.	Dr Mujeeb-ur-Rahman	Member, Organising Committee	V.P.C.I. University of Delhi and Indian Pharmacological Society	36th Annual Conference of the Indian Pharmacological Society India Habitat Centre, New Delhi December 5-7, 2003
68.	Dr Mujeeb-ur-Rahman	Member, Organising Committee	V.P.C.I. University of Delhi and Department of Science and Technology, Govt. of India	Workshop cum Training Programme on New Perspectives in Drug Discovery and Development Delhi December 8-9, 2003
69.	Dr Mujeeb-ur-Rahman	Member, Organising Committee	V.P.C.I. University of Delhi	First Congress of the Indian Association of Sarcoidosis and Other Granulomatous Disorders Delhi January 12, 2004
70.	Dr Rajinder Bajaj	Member, Organising Committee	V.P.C.I. University of Delhi	National Symposium on Global Challenges in TB: An Update on the occasion of the 54th Foundation Day Celebrations of the V.P.C.I. Delhi April 6, 2003

S. No.	Faculty Member	Associated As	Organiser(s)	Conference, Place and Date
71.	Dr Rajinder Bajaj	Member, Organising Committee	V.P.C.I. University of Delhi and Indian Pharmacological Society	Pre-Conference Workshop of 36th Annual Conference of Indian Pharmacological Society on 'Pharmacology Today Progressing Academia-Industry Interactions' Delhi December 4, 2003
72.	Dr Rajinder Bajaj	Member, Organising Committee	V.P.C.I. University of Delhi and Indian Pharmacological Society	36th Annual Conference of the Indian Pharmacological Society India Habitat Centre, New Delhi December 5-7, 2003
73.	Dr Rajinder Bajaj	Member, Organising Committee	V.P.C.I. University of Delhi and Department of Science and Technology, Govt. of India	Workshop cum Training Programme on New Perspectives in Drug Discovery and Development Delhi December 8-9, 2003
74.	Dr Rajinder Bajaj	Member, Organising Committee	V.P.C.I. University of Delhi	First Congress of the Indian Association of Sarcoidosis and Other Granulomatous Disorders Delhi January 12, 2004
75.	Mrs Uma Tyagi	Member, Organising Committee	V.P.C.I. University of Delhi	National Symposium on Global Challenges in TB: An Update on the occasion of the 54th Foundation Day Celebrations of the V.P.C.I. Delhi April 6, 2003
76.	Mrs Uma Tyagi	Member, Organising Committee	V.P.C.I. University of Delhi and Indian Pharmacological Society	36th Annual Conference of the Indian Pharmacological Society India Habitat Centre, New Delhi December 5-7, 2003
77.	Mrs Uma Tyagi	Member, Organising Committee	V.P.C.I. University of Delhi	First Congress of the Indian Association of Sarcoidosis and Other Granulomatous Disorders Delhi January 12, 2004

Short Term Specialised Trainings Imparted by Faculty Members

S. No.	Name and Organisation	Subject	Faculty Member (Department)	Period
1.	Mr Ram Lakhan (M.Sc - PhD combined Courses in Biomedical Sciences) Summer Trainee Dr B.R. Ambedkar Centre for Biomedical Research, University of Delhi, Delhi	Effect of anesthesia on neural regulation of blood pressure	Prof. M. Fahim and Dr Vishal Bansal (Physiology)	Three months (May – July 2003)
2.	*i.* Mr Narender Kumar *ii.* Ms Paulomi Bhanja *iii.* Mr Navneet Singh *iv.* Mr Balbir Singh (M.Sc - PhD combined Courses in Biomedical Sciences) Dr B.R. Ambedkar Centre for Biomedical Research University of Delhi, Delhi	Training in experimental pharmacology, toxicology and stress research	Prof. A. Ray (Pharmacology)	Six months July-December 2003 for *i & ii* and January - June 2004 for *iii & iv*
3.	Ms Rashmi Pasricha (M.Sc - PhD combined Courses in Biomedical Sciences) Dr B.R. Ambedkar Centre for Biomedical Research University of Delhi, Delhi	Attempt at cloning and expression of genes coding for virulence and drug resistant of *M. tuberculosis*	Prof. M. Bose (Microbiology)	Six months (January - June 2003)
4.	Ms Ashu Kumari (M.Sc Final year) Department of Biotechnology, University of Allahabad	Identification and RFLP analysis of clinical isolates of *M. tuberculosis* using IS6110 probe	Prof. M. Bose (Microbiology)	Two months (May - June 2003)
5.	Ms Paridhi Saini (M.Sc Final year) Kanya Gurkul Mahavidhyalaya, Gurkul, Kangri	Effect of carbachol and disodium cromoglycate on protein kinase C in rat peritoneal macrophages	Prof. S.K. Bansal (Biochemistry)	Four months [December (2003) - March (2004)]
6.	Ms Anita Kamra (M.Sc Final year) Kanya Gurkul Mahavidhyalaya, Gurkul, Kangri	Effect of carbachol and disodium cromoglycate on the production of nitric oxide and the release of – 1β in rat peritoneal macrophages	Prof. S.K. Bansal (Biochemistry)	Four months [December (2003) - March (2004)]

Cultural and Sports Activities

During this year, the staff of the Institute had a very eventful and memorable time. The performances (songs and dances, mono-actions, jokes, etc.) of the staff members at the Annual Function of the Delhi University Staff Club were highly appreciated.

In the Sports and Games event the staff members of the Institute had participated in various Annual Tournaments and Annual Athletic Meet of Delhi University Staff Club and also achieved distinguished positions. The details of awards won in various events by the employees of the Institute were as follows:

- Mr Mahipal (Medical Mycology) and Mr Ashok Kumar (Maintenance Cell) were members of the Winner's up Football Team.
- Mr Mahipal (Medical Mycology) and Mr Ashok Kumar (Maintenance Cell) were members of the Runner's up Cricket Team.
- Mr Satish Sharma (Accounts Section) and Mr D.K. Sahu (Publication Division) stood second place in the Lucky Doubles category of Table Tennis event.
- Mr Satish Sharma (Accounts Section) and Mr Eric Harrison (Library) stood third place in the Doubles category of Table Tennis event.

List of Publications

1. Agarwal MK, Gupta S, Chawla S, Bansal SK, Vijayan VK. Cross-reacting and unique allergenic and antigenic components in insect extracts used for the diagnosis and immunotherapy of patients suffering with respiratory allergy. In: *Trends in Clinical Biochemistry and Laboratory Medicine*, Published by the Association of Clinical Biochemists of India; 2003: 314-24.

2. Basu S, Gugnani HC, Joshi S, Gupta N. Distribution of C*andida* species in different clinical sources in Delhi, India and proteinase and phospholipase activity of C*andida albicans* isolates. *Revista Iberoamerican Micologia* 2003; **20**: 137-40.

3. Basu S, Prakash K, Gugnani HC, Joshi S, Wattal C, Padhye AA. Isolation of *Trichosporon mucoides* from urine. *Journal De Medicale Mycologie* (Journal of Medical Mycology) 2003; **13**: 155-56.

4. Bhandari B, Reddy MPK, Fahim M. Role of ascorbic acid in cardiovascular performance during acute hemorrhage. *Vascular Disease Prevention* 2004; **1**: 69-78.

5. Bhattacharya SK, Sen P, Ray A. *Pharmacology*; 2nd edn; New Delhi: Elsevier, 2003.

6. Bisht V, Arora N, Singh BP, Gaur SN. Purification and characterization of amajor cross-reacting allergen from *Epicoccum purpurascens*. *Int Arch Allergy Immunol* 2004; **133**: 217-24.

7. Chowdhary A, Ahmad S, Khan ZU, Doval DC, Randhawa HS. *Trichosporon asahii* as an emerging etiologic agent of disseminated trichosporonosis: A case report and an update. *Indian J Med Microbiol* 2004; **22:** 16-12.

8. Chowdhary A, Beekar A, Fegeler W, Gugnani HC, Kapoor L, Randhawa VS, Mehta G. Investigations on an outbreak of candidemia due to *Candida tropicalis* in a neonatal intensive care unit. *Mycoses* 2003; **46**: 287-92.

9. Dhingra VK, Aggarwal N, Rajpal S, Aggarwal JK, Gaur SN. Validity and reliability of sputum smear examination as diagnostic and screening test for tuberculosis. *Indian J Allergy Asthma Immunol* 2003; **17**: 67-69.

10. Dhingra VK, Rajpal S, Aggarwal N, Gaur SN. Prevalence of tuberculosis in police force – An epidemiological survey. *Indian J Allergy Asthma Immunol* 2003; **17**: 111-14.

11. Fahim M. Cardiovascular sensory receptors and their regulatory mechanisms. *Indian J Physiol Pharmacol* 2003; **47**: 124 -46.

12. Gaur SN, Rajpal S, Rohatgi A. Prevalence of bronchial asthma and allergic rhinitis among school children in Delhi. *Int Med J Thailand* 2004; **20**: 8-13.

13. Gugnani HC, Vijayan VK, Tyagi P, Sharma S, Stchigel AM, Guarro J. Onychomycosis due to *Emericella quadrilineata*. *J Clin Microbiol* 2004; **42**: 914-16.

14. Gugnani HC, Becker K, Fegeler W, Basu S, Chattopadhya D, Baveja U, Satyanarayana S, Kalghatgi T, Murlidhar A. Oropharyngeal carriage of *Candida* species in HIV-infected patients in India. *Mycoses* 2003; **46**: 299-306.

15. Gulati K, Ray A. Preventable adverse drug reactions : Focus on theophylline In : Ray A, Gulati K, ed

Pharmacovigilance : An update ; Delhi: Image Graphics India; 2004: 218-30.

16. Gulati K, Wardhan N, Anand S, Ray A. Studies on the toxicodynamics of aminophylline-induced seizures in mice. *Indian J Pharmacol* 2003; **35**: 196-97.

17. Joshi A, Gugnani HC, Vijayan VK. Survival of *Penicillium marneffei* in sterile and unsterile soil. *Journal De Medicale Mycologie* (Journal of Medical Mycology) 2003; **13**: 211-12.

18. Khanal B, Bhattacharya SK, Karki BMS, Shariff M, Deb M. Educating nurses to build a care-with-confidence team. Education for Health 2003; **16**: 228-29.

19. Khanna P, Panjabi C, Maurya V, Shah A. Isoniazid associated, painful, bilateral gynaecomastia. *Indian J Chest Dis Allied Sci* 2003; **45**: 277-79.

20. Koshy L, Dwarakanath BS, Raj HG, Chandra R, Mathew TL. Suicidal oxidative stress induced by certain antioxidants. *Indian J Exp Biol* 2003, **41**:1273-78.

21. Kumar A, Bose M, Brahamachari V. Analysis and expression profile of mammalian cell entry (mce) operons of *Mycobacterium tuberculosis. Infection and immunity* 2003; **71**: 6083-87.

22. Kumar P, Sharma S, Khanna M, Raj HG. Effect of quercetin on lipid peroxidation and changes in lung morphology in experimental influenza virus infection. *Int J Exp Path* 2003, **84**: 127-34.

23. Kumar R. Mild, moderate and severe form of allergic bronchopulmonary aspergillosis – A clinical and serological evaluation. *Chest* 2003; **124**: 890-92.

24. Kumar R, Bhardwaj VK. Allergic bronchopulmonary aspergillosis in India. *Chest* (Indian Edition) 2003; 4: 61-62.

25. Kumar R, Chugh T, Gaur SN. Allergic bronchopulmonary aspergillosis – A review. *Indian J Allergy Asthma Immunol* 2003; **17**: 55-66.

26. Kumar R, Gaur SN, Vatsa HK. The role of inhaled frusemide in management of bronchial asthma. *Indian J Allergy Asthma Immunol* 2003; **17**: 5-8.

27. Kumar R, Singh P. Epidemiological aspects of allergic bronchopulmonary aspergillosis. *Clin Pul Med* 2004; **11**: 65-70.

28. Kumar R, Singh P, Arora R, Gaur SN. Effect of itraconazole therapy in allergic bronchopulmonary aspergillosis. *Saudi Med J* 2003; **24**: 546-47.

29. Menon B, Kaur C, Menon MPS. Oxidants and antioxidants in health and disease. *Pulmon* 2003; **5**: 43-48.

30. Menon B, Kaur C, Menon MPS. Effect of high dose fluticasone propionate on hypothalmo-pituitary-adrenal axis in patients of bronchial asthma. *Pulmon* 2003; **5**: 99-103.

31. Moses AKR, Vijayan VK, Kuppurao KV. Relationship between noninvasive methods of determining anaerobic threshold. *J Physical Edu Exercise Sci* 2004; **1**: 8-11.

32. Panjabi C, Khanna P, Jain S, Shah A. A 35-year old man with a non-resolving pleural effusion. *Indian J Tuberc* 2004; **51**: 37-41.

33. Randhawa HS, Kowshik T, Khan ZU. Decayed wood of *Syzygium cumini* and *Ficus religiosa* living trees in Delhi/ New Delhi metropolitan area as natural habitat of *Cryprtococcus neoformans*. *Med Mycol* 2003; **41**: 199-209.

34. Ravi K. Basic research on respiratory physiology with relevance to clinical syndromes in acute respiratory disease – an overview. In: Raghunath D, Nayak R, ed *Trends in Respiratory Diseases: The Environment and the Infection* New Delhi, Tata McGraw-Hill Publishing Company Ltd., 2003: 29-47.

35. Satyanaryana S, Kalghatgi AT, Gugnani HC, Murlidhar A. Lymphadenitis due to *Rhodotorula mucilaginosa* in a HIV-infected patient. *Journal De Medicale Mycologie* (Journal of Medical Mycology) 2003; **13**:149-50.

36. Saxena S, Madan T, Shah A, Muralidhar K, Sarma PU. Association of polymorphisms in the collagen region of SP-A2 with increased levels of total IgE antibodies and eosinophilia in patients with allergic bronchopulmonary aspergillosis. *J Allergy Clin Immunol* 2003; **111**: 1001-07.

37. Shah A, Maurya V, Panjabi C, Khanna P. Allergic bronchopulmonary aspergillosis without clinical asthma caused by *Aspergillus niger*. *Allergy* 2004; **59**: 236-37.

38. Shakil NA, Dhawan A, Sharma NK, Kumar V, Kumar S, Bose M, Raj HG, Olsen CE, Cholli AL, Samuelson LA, Kumar J, Watterson AC, Parmar VS, Prasad AK. Synthetic, biocatalytic acetylation and anti-tuberculosis activity evaluation studies on (±)-4-alkyl-3, 4-hydro-3-ω-dihydroxyalkyl-2*H*-1, 3-benzoxazines. *Indian J Chemistry* 2003; **42B**: 1958-69.

39. Shariff M, Deb M, Singh R. The study of rotavirus diarrhea in Eastern Nepal. *Indian J Med Microbiol* 2003; **21**: 87-90.

40. Singh AK, Verma J, Bhatanagar A, Sen S, Bose M. Tc-99m isoniazid: A specific agent for diagnosis of tuberculosis. *World J Nuclear Medicine* 2003; **2**: 292-305.

41. Singhal P, Kumar R. A study of skin sensitivity to various allergens by intradermal test in patients with respiratory allergy (bronchial asthma and allergic rhinitis) in India*. Intern Med J Thai* 2003; **19**: 202-06.

42. Sood N, Gugnani HC, Joshi A, Singh B. Sporotorichosis: Report of first case from the state of Jharkhand, India. *Journal De Medicale Mycologie* (Journal of Medical Mycology) 2004; **14**: 52-53.

43. Swaminathan S, Kuppurao KV, Somu N, Vijayan VK. Reduced exercise capacity in non-cystic fibrosis bronchiectasis. *Indian J Paediatr* 2003; **70**: 553-56.

44. Verma J, Singh BP, Sridhara S, Gaur SN, Arora N. Purification and characterization of a cross-reactive 45-kD major allergen of *Fusarium solani. Int Arch Allergy Immmunol* 2003; **130**: 193-99.

45. Vijayan VK. Severe acute respiratory syndrome (Editorial). *Indian J Chest Dis Allied Sci* 2003; **45**: 157-59.

46. Vijayan VK. Severe acute respiratory syndrome. In: Bhattacharya PK,ed *Medicine Update* Association of Physicians of India (Assam State Chapter), 2003; **7**: 206-08.

47. Zahid AM, Ejaz HM, Fahim M. Endothelium mediated vasorelaxant response of garlic in isolated rat aorta: Role of nitric oxide. *J Ethnopharmacol.* 2004; **90**: 5-9.

Professor J.S. Bajaj, former Professor and Head, Department of Medicine, AIIMS, New Delhi and former Member, Planning Commission, Government of India, who delivered the 5th VPCI Oration receiving the memento from Prof. P.N. Srivastava, Chairman, Governing Body and Dr V.K. Vijayan, Director on 7th April 2003 on the occasion of 54th Foundation Day Celebrations of the Institute.

Dignitaries on the dias during the inaugural function of the 36 the Annual Conference of the Indian Pharmacological Society on 5th December 2003.

“Bhoomi Pujan” on the occasion of the start of construction work of Auditorium on 28th May 2003

Dignitaries on the dias during the inauguration of the “First Congress of the Indian Association of Sarcoidosis and Other Granulomatous Disorders” on 12th January 2004.