5. MOLECULAR BIOLOGY OF ORAL CANCER

5.1 Molecular Biology of Oral Cancer

Squamous cell carcinoma of oral cavity is one of the most common malignant neoplasm in India. More than 4 lakhs cases are appearing every year. The disfiguring effect associated with significant mortality make the problem more alarming.

The contribution of tobacco and betel quid etc. is already documented as the major cause but recently the role of human papillomavirus (HPV) infection has been suggested by different investigating groups worldwide. Whatever may be the factor(s), it is gene(s) that are associated with cellular growth and differentiation must be affected as cancer in a sense is a genetic disease. Interplay of some host cell regulatory protein such as p53 and Rb with viral transforming genes E6, E7 are involved in deregulation of cell cycle leading to carcinogenic progression. Recently, the role of cellular inducible transcriptional factor such as AP-1 and NFκB in transcriptional regulation of viral oncogene expression has been suggested. Redox regulation of these genes by certain herbal (curcumin, neem) and synthetic (PDTC) antioxidants are also reported in cervical cancer. In oral precancer, curcumin has been specifically shown to have significant curative effects. However, molecular mechanism(s) underlying HPV-mediated oral carcinogenesis or its down regulation by antioxidants is not clear. It seems exciting and important to dissect molecular pathways involved during oral carcinogenesis with or without HPV infection.

With this background in mind following research activities have been initiated:

Detection and typing of HPV prevalence in oral precancer and cancer.

Analysis of expression of all members of transcriptional factors AP-1 and NFκB in oral cancer /precancer and their co-relation with cell lines derived from oral cancer.
Analysis of transcriptional regulation in HPV in oral premalignant and malignant tissues and oral cancer cell lines and its modulation by synthetic and herbal anti-oxidants.

6. HUMAN RESOURCE DEVELOPMENT

A. Ph.Ds Submitted

1. Uma Kailash: "Study of telomerase expression during development of cancer of the uterine cervix in women" Jawharlal Nehru Technological University, Hyderabad.


B. Ph.Ds Under registration


8. Priyanka Verma , “Role of oxidative stress and cellular transcription factor AP-1 in pre and post operative cases of breast carcinoma", Delhi University, Delhi.

C. M.Ds awarded

1. Dr. Vikram Singh, Deptt. of Medicine, Lok Nayak Hospital, MAMC, New Delhi. "Analysis of p53 gene mutations in primary carcinoma lung and its relation to clinicopathological parameters” Delhi University, 2002.

2. Dr. Vishal Gupta : Department of Surgery, Lok Nayak Hospital, MAMC, New Delhi “The role of BRCA1, BRCA2 and p53 tumor suppressor genes in Breast and ovarian cancer” Delhi University, New Delhi, 2002.

3. Dr. Ritesh Sachdev, Department of Pathology, MAMC, New Delhi “p53 mutation in premalignant lesions of oral cavity and its relation to c-fos expression”, Delhi University, New Delhi, 2002.
4. Dr. Pralay Chakravarty, Department of Medicine, Lok Nayak Hospital, MAMC, New Delhi “Evaluation of hepatitis D infections in patients of hepatitis B related liver disease by PCR and genotyping of HDV isolates by RFLP”, Delhi University, Delhi, 2002.

D. M.D. Thesis submitted:

2002 -2003

1. Dr. Mingma L. Sherpa, Department of Biochemistry, Lady Hradinge Medical College and SSK Hospital, New Delhi, "Association of oxidative stress with c-fos and c-jun expression in breast cancer", Delhi University, Delhi, 2003.

2. Dr. Sudha Rani, Dept. of Obstetrics & Gynacology, MAMC and Lok Nayak Hospital, New Delhi, "Evaluation of atypical squamous cells of undetermined significance (ASCUS) and low grade squamous intraepithelial lesions by detection of high risk HPV types with PCR", Delhi University, Delhi, 2003.

3. Dr. Arun Kundra, Deptt. of Medicine, MAMC & Lok Nayak Hospital, New Delhi. "A Prospective study to evaluate the role of new emerging hepatotropic viruses (Sen- V, TTV and HGV) in acute viral hepatitis and fulminant hepatic failure of unknown etiology", Delhi University, Delhi, 2003.

4. Dr. Tarun K. Bansal, Deptt. of Medicine, MAMC & Lok Nayak Hospital, New Delhi. "Detection of mutation in the precore region of the hepatitis B-virus genome in patients with hepatitis B related chronic liver disease and its clinical implication", Delhi University, Delhi, 2003.


7. Dr. Ajay Yadav, Deptt. of Surgery, MAMC, New Delhi. "Transcription factor (Activator Protein-I) and microangiogenesis in breast cancer", Delhi University, Delhi, 2003.

DNB thesis submitted

DM thesis submitted


Special project Scientists Working:

1. CSIR Pool scientist – 2002-2005: Dr. Geetanjali, ENT Deptt, RML Hospital, New Delhi


M.SC. (BIOTECH) project Dissertations carried out. (For 4-6 Months): 2001-2002

1. Mr. Shailendra Yadav, "Role of NFkB during cervical carcinogenesis", Deptt. of Biotechnology, Purbanchal University, Jaunpur, 2002.


9. Manpower development/ Training provided to:

Indian Science Academy Summer fellows:
1. Dr. K. Nataraja Seenivasan, Lecturer, PG & Research Department of Microbiology, K.S.R. College of Arts & Science, Tiruchegode – 637 209 - 2002

2. Ms. E. Manjuladevi. E, MBBS (final Year), Sri Sidhartha Medical College, Tumkur, Karnartaka – 2002

3. Mr. Ashok Kumar, M.Sc (Bio med. Genetics) PGI Basic Medical Science, Taramani, Chennai – 2003

4. Ms. Purabi Deka, M.Sc (Biotech.) Gauhati University, Assam - 2003

In Service and other Training:

1. Dr. Vinita Singh, RA, Institute of Pathology (ICMR), New Delhi – 110 002 (2002).
2. Mr. Trivikram Despande, Department of Zoology, Goa University, Goa (2002).
3. Mr. Md. Sahid, Department of Bioscience, Jamia Millia Islamia, New Delhi (2003).

List of Summer Training Fellows, 2003

1. Kuhulika Bhalla, Sri Venkateswar College, University of Delhi, New Delhi.
2. Swadha Anand, Sri Venkateswar College, University of Delhi, New Delhi.
3. Deepali, MD University, Rohatak.

ICMR summer fellow

1. Dr. Manish K. Jha. MBBS 3rd year, MAMC, New Delhi

7. REFERRAL SERVICE

The Institute continued to offer referral services to professionals. During the year, referral services were offered as follows:

- Cervical smears: 882
- Fine needle aspiration cytology: 839
- Non Gynae exoliative cytology: 429
- Histopathology: 256