

1. Identification of potential anti-HIV natural product analogs using molecular docking and medicinal chemistry approaches.	
Co-Principle Investigators	<p>I. Dr. Inder Pal Singh, Assistant Professor, Dept. of Natural Products, NIPER, Mohali.</p> <p>II. Prof. K. K. Bhutani, Director-in-Charge, Head, Dept. of Natural Products, NIPER, Mohali.</p> <p>III. Dr.Smita Kulkarni, Scientist E, Dept of Molecular Virology, NARI, Pune.</p>
Other investigators	Nil
Category/nature	Research & Development, Infectious Diseases.
Collaboration/participating Centers	<p>1.National Institute of Pharmaceutical Education and Research, Mohali-160062, Punjab, India.</p> <p>2.National AIDS Research Institute, Pune, 411026, Maharashtra, India.</p>
Funding agency(ies)/sponsors	Department of Biotechnology & Indian Council of Medical Research, Government of India.
Budget	Rs. 1,36,08,760/-
Study period	Four years (March 2013 - February 2017).
Objectives	<p>I. Selection, design and synthesis of lead compounds (NIPER).</p> <p>II. Anti-HIV testing of synthesized molecules using cell based and enzymatic assays (NARI).</p> <p>III. Identification of lead molecules (NIPER, NARI).</p>
Descriptions	The project involves selection of compounds with known anti-HIV activity as lead molecules for the discovery of new anti-HIV molecules, which may target the early infection stages or one or more targets in the HIV replication cycle. From the available literature, eleven lead compounds that have shown activity at less than one micromolar range have been selected. Using divergent synthetic strategies, the molecules will be functionalized on the selected skeletons to increase the anti-HIV activity. Where the crystal structures of the targets are known, molecular modeling studies will be used

	for identifying molecules that show better docking on the target enzymes. These molecules will be synthesized and tested for anti-HIV activity using cell based and enzymatic assays. It is anticipated that our comprehensive approach will help in identifying potential novel anti-HIV molecules for the drug discovery pipeline.
Current status	Project work initiated from 1 st May 2013.
Publications	Nil
Presentations	Nil

2. Identification of anti-HIV leads from plant sources and determination of mechanism of action.	
Principle Investigator	Dr Smita Kulkarni, Scientist E, Dept of Molecular Virology, NARI, Pune.
Co-Principle Investigator	Dr. Swati Joshi, Scientist F, Dept of Organic Chemistry, NCL, Pune.
Other investigators	Nil
Category/nature	Research and Development, Microbicide Related Research.
Collaboration/participating Centers	1.National AIDS Research Institute, Pune, 411026, Maharashtra, India. 2.National Chemical Laboratory, Pune-411008, Maharashtra, India.
Funding agency(ies)/sponsors	Department of Biotechnology & Indian Council of Medical Research, Government of India.
Budget	Rs. 62,64,200/-
Study period	Three years (May 2013 - April 2016)
Objectives	I. Phytochemical investigations and identification of active fractions (NCL). II. Anti-HIV testing of active principles using cell based and enzymatic assays (NARI). III. Determination of mechanism of action of the lead molecules

	(NARI). IV. Identification of lead molecules (NARI, NCL).
Brief description	The proposed study plans to identify active principle(s) from the two lead plant extracts obtained from the previous project using cell based and enzymatic assays and determine their mechanism of action. The project will lead to the identification of novel, potent anti-HIV molecules from natural sources that can be used for developing anti-HIV drugs and/or microbicides.
Current status	Project work initiated from 1 st October 2013
Publications	Nil
Presentations	Nil

3. Intra-mural project of Ph D Student

Assessment of Efficiency of Nanoparticles as a Carrier System for Antiviral Agents in HIV-1 Infected Human Cell Lines - In Vitro.	
Principal Investigator	Guide - Dr. Srikanth Tripathy, Scientist G & Director, National JALMA Institute of Leprosy and Other Mycobacterial Infections, Agra. Ph.D. Student : Ms. Leila Fotooh Abadi
Co-Principal Investigator(s)	Co-Guide: I. Dr. Smita Kulkarni, Scientist E, National AIDS Research Institute, Pune. II. Dr. Absar Ahmed, Senior Scientist, National Chemical Laboratory, Pune.
Other Investigator(s)	Nil
Category / Nature	Product Development and Testing Research

Collaboration / Participating Centers	Nil
Funding Agency(ies) / Sponsors	NARI Intramural
Budget	Rs. 10, 00,000/- (NARI)
Study Period	Three Years (2012 to 2015)
Objectives	<p>1) Biological synthesis of inorganic nanoparticles and their characterization using TEM, XRD, FTIR.</p> <p>2) Conjugation of nanoparticles with anti-HIV drugs (Zidovudine and Tenofovir)</p> <p>3) Evaluation of nanoparticles for cellular cytotoxicity and genotoxicity.</p> <p>4) Determination anti-HIV activity of the conjugated nanoparticles in different cell systems.</p>
Brief description (one paragraph)	<p>Current antiretroviral drugs exhibit cellular cytotoxicity and do not reach target cell population. Additionally, they demonstrate many side effects in HIV infected individuals. Although the nanoparticles are smaller in size, they possess adequate area for drug adsorption. It is anticipated that the conjugation of anti-retroviral drugs with nanoparticles would offer an efficient drug carrier system for direct drug delivery onto the HIV infected target cell. Considering these aspects, there is a need to identify suitable drug carrier systems for enhanced bioactivity.</p>
Current status	Nil
Publications	Nil
Presentations	Nil