

## **RESUME**

**Arunkumar.P**

**DEGREE** : *Master of technology*  
**BRANCH** : *Nano-medical science*  
**MAIL I.D** : [kumar.arun205@gmail.com](mailto:kumar.arun205@gmail.com)

### **EXPERTISE IN:**

*Synthesis and characterization of polymeric nano materials for drug delivery applications; DLS (Dynamic Light Scattering); SEM; FTIR (Fourier Transform Infra-Red) spectroscopy; XRD(X-Ray diffraction) studies; DSC(Differential Scanning Calorimeter); DTA(Differential Thermal Analyser); Drug encapsulation and loading efficiency studies; Drug release studies; Cellular uptake studies using fluorescence microscopy; Toxicity studies like MTT assay etc.*

### **RESEARCH EXPERIENCE:**

*Role: As a research/teaching student in Indian Institute of Technology-Bombay,India.  
Duration: 11 months (from July2011-June 2012)*

*Role: As a graduate research student in Amrita Center for Nanosciences, Cochin, India.  
Duration: 12 months (from June2010-May2011)*

### **PROFESSIONAL EXPERIENCES:**

*Employer: Cognizant Technology Solutions Pvt Ltd, Chennai.*

*No. of months: 13*

*Employer: Giract, Geneva; worked for its branch in India in Coimbatore.*

*Designation: Business Research Executive-for food industries*

*No. of months: 8*

**ACADEMIC PROFILE:**

Course	Institution	Board / University	Marks % / CGPA	Ranking
X	Sri Jeyandra Swamigal Silver Jubilee Matriculation hr.sec.school. Tirunelveli-11.	Matriculation	89%	School third
XII	I.I.P.E. Lr. Matriculation Higher Secondary School, Tirunelveli-11.	State board	97%	School first
B.TECH- Biotech	PSG College of Technology, Peelamedu, Coimbatore-04.	Anna University	7.83/10	First class
M.Tech- Nanomedical science	Amrita Center for Nanoscience (ACNS)	Deemed University	8.58/10	Ranked one among the top ten ranks

**ACADEMIC ACHIEVEMENTS:**

- 1) Recipient of “Aringhar Anna award for meritorious students”  
( For topping the school in standard xii)
- 2) Recipient of **Department of Science and Technology( Govt. Of India)** scholarship during my M.Tech program in Amrita University

- 3) *Selected among the **first 20 TEAMS** to present our commercially viable scientific idea in a **national level competition- BEST 2010 (Biotechnology Entrepreneurship Student Teams)** conducted by Association of Biotechnology Led Enterprise(ABLE),India.*

### **PROJECTS DONE :**

- 1) **Preparation and characterization of PLGA nanoparticles as drug-delivery systems for pancreatic cancer.**

*Under the Guidance of*

***Dr.Vinoth Lakshmanan and Dr.Jayakumar***

*PLGA (Poly (DL-lactide-co-glycolide) is a smart biopolymer that is non-toxic, biocompatible and biodegradable which makes them suitable for various biomedical applications such as drug delivery, gene therapy, tissue engineering etc. Silymarin, a major hepato-protectant drug is recently found to have a good anti-cancerous property. Because of its hydrophobicity and poor oral bioavailability, its potential is not fully utilized. In this work, we developed and compared two nanoformulations of Silymarin: drug as such as nanoparticles and drug loaded PLGA nanoparticles. The prepared nanoparticles were characterized using DLS, SEM, FT-IR, XRD and TG/DTA. Size analysis by DLS and SEM revealed that drug nanoparticles are of size  $150 \pm 30\text{nm}$  and drug loaded PLGA nanoparticles are spherical particles with mean diameter of about  $200 \pm 40\text{nm}$ . Silymarin was encapsulated in PLGA nanoparticles with an efficiency of 64% and loading efficiency of 6%. In vitro drug release profile was studied under  $37^\circ\text{C}$  and pH 7.4 for different incubation periods. Cytotoxicity studies indicated that Silymarin loaded PLGA nanoparticles were less toxic to normal cells at lower concentrations ( $75\mu\text{g/ml}$  and  $150\mu\text{g/ml}$ ), but were almost 50% toxic at  $300\mu\text{g/ml}$ . On the other hand it was not much effective against prostrate cancer cells (PC3) at the highest concentration of the drug. Interestingly, Silymarin nanoparticles showed high toxicity towards cancer cells compared to the normal cells in a concentration dependent manner. Fluorescence microscopy revealed the fluorescence spots of the Rhodamine123 loaded Silymarin nanoparticles inside the cells confirming their cellular internalization. Overall we demonstrate Silymarin nanoparticles as a promising delivery system for the drug Silymarin into the prostrate cancer cells with less toxicity towards normal cells.*

- 2) **Characterisation of IS257 in E.faecalis:**

*Under the Guidance Of*

***Dr. Selvi Subramanian***

*IS257(Insertion sequence257) is one of the most prevalent transposable element found in most of the clinical isolates of E.faecalis. Isolation of genomic DNA of E.faecalis is done.*

*Isolated DNA was digested using EcorI restriction enzyme and ran on a Polyacrylamide gel. Using southern-hybridization, copy-number of IS257 was found.*

**3) Construction of database for flowering genes**

*Under the guidance of  
Dr. Selvi Subramanian*

**4) Comparison of basal-ganglial function of normal subjects and Parkinsons-diseased(PD) patients using saccades:**

*Under the guidance of  
Dr. Aditya Murthy,  
System Neuroscience,  
National Brain Research Centre,  
Gurgaon.*

**TECHNICAL PAPERS PRESENTED:**

- i. *Presented and Secured first place for the paper titled “Comparison of Basal ganglia function of normal and PD patients” in EQUINOX’07*
- ii. *Presented a paper titled “Fluorescence Resonance Energy Transfer(FRET) ” in EQUINOX’06*
- iii. *Participated in the P.S.G.Tech symposium in Biosciences-2004- “Bioprocess Monitoring and Control”*
- iv. *Participated in the P.S.G.Tech symposium in Biosciences-2005- “Human Resource Development for Biotech Commerce”*
- v. *Anchored and participated in the P.S.G.Tech symposium in Biosciences-2006- “Flavours and Fragrances-from perception to practice”*

**TRAINING DETAILS:**

Name of the Industry	Duration	Areas of Exposure
<b>Sugarcane Breeding institute, Indian council of agricultural research(ICAR) Coimbatore.</b>	15days	#DNA isolation # PCR analysis using random and microsatellite primers.

**BIOINFORMATICS SKILLS:**

- *Protein Modelling*
- *Receptor – Ligand Docking*
- *Phlogenetic Analysis*
- *Receptor Modelling and Active site Identification in Protein*

**INDUSTRIAL VISITS:**

- *Bharat Biotech.*
- *Dr. Reddys Labs.*
- *IICRISAT.*

**EXTRA & CO-CURRICULAR ACTIVITIES:**

- Active Member Of Youth Red Cross.
- Participated in Intra college and Intra school competitions
- RUNNER-UP in state level science Quiz competition.

**PERSONAL DETAILS:**

**DATE OF BIRTH** : 20-05-1985

**SEX** : Male

**MOTHER TONGUE** : Tamil

**LANGUAGES** : English, Tamil , Hindi

## **DECLARATION**

I ,Arunkumar,P. do hereby confirm that the information given above is true to the best of my knowledge.

DATE : 20.7.12

SIGNATURE: P.Arunkumar