India is a very unique country. It has around 2000 ethnic groups, every major religion, varied geographic regions compounded with variations across the populations on social parameters. At times it forces one to think, is it fair to "treat" them all the same way, despite their variable genetic background. More and more published work is emerging challenging the concept of one pill fit all. Researchers are now trying to cater individualized treatment based on genetic makeup of the patient. After completion of my Master of Pharmacy (Pharmacology), I decided to pursue doctoral thesis. I was looking for a suitable laboratory where I could learn the nuances of molecular pharmacology. In this quest, I met Dr R.K. Goel, Senior lecturer, Dept of Pharmaceutical Science, Guru Nanak Dev University, Amritsar. He advised me to undertake pharmacoepidemiological studies of anti hypertensive therapy in a rural population of Haryana. During the course of our interaction he mentioned about pharmacogenomics- a new field that could provide some interesting leads as to why few patients failed to respond to anti-hypertensive therapy. Honestly, I had no clue how to conduct these studies. Besides, there was no infrastructure in the Dept of Pharmaceutical Science, Guru Nanak Dev University, Amritsar to undertake such investigations. At this juncture, me and Dr R.K. Goel, met Dr P.K. Sehajpal, Professor, Dept of Molecular Biology and Biochemistry, Guru Nanak Dev University, Amritsar, who agreed to help us in studying candidate genes polymorphism in essential hypertensive patients and their controls.

Having agreed to explore the role of genetic variability in response to anti-hypertensive therapy, the challenge was to reliability identifying such patients. Being a employee in the M M College of Pharmacy, M. M. University, that has the access to a fully equipped multispecialty hospital I grabed this opportunity and talked with Dr B K Aggarwal, Head, Dept, of Medicine, M. M. Institute of Medical Science and Research for his help in identifying essential hypertensive patients and for collection of blood samples in his OPD.

It is with great pleasure that I place on record my deep sense of gratitude and heartfelt thanks to my research guides Dr R.K. Goel who agreed to take me as a PhD student and for his help and support at every stage of this work. I am extremely happy that I had an opportunity to work under Dr P K Sehajpal. It was really a great experience working under him and without his guidance; it would have been an unachievable task. His innovative approach to tackle day to day problems in research and elaborative explanations for the designed experiment were remarkable and instigated a keen research interest in me. He made me work hard and always motivate me to improve upon my writing skills.
In true sense, I pay my sky-high respect to Dr SK Garg, Emeritus Scientist (CSIR), Department of Molecular biology and Biochemistry, Guru Nanak Dev University, Amritsar for making my stay in the research labs a pleasure which allowed me to extract the better out of the best. Once again and forever, I cherish to express my regards to him for his indefinable humanity.

I extend my thanks to Dr BK Aggarwal, Head, Department of Medicine, M. M. Institute of Medical Science and Research for his invaluable help in sample collection from the hypertensive patients. I am indebted to all the hypertensive patients for giving their blood samples and consenting to participate in this study. I would also like to put on record the untiring effort of Mrs. Neetu Monga and Mr Karam Chand for the collection of blood samples from normal controls.

I also owe my indebtedness to Mr Tarsem Lal Garg, Chairman, M. M. University Trust, Mullana for the infrastructure and all other essential facilities and encouragement given to me during exploratory project work, which was completed successfully.

I express my deepest gratitude and appreciation to Mrs. Amita Sehajpal, Jyotsana Sehajpal, Tohina Sehajpal and Madhav Sehajpal for their support and for making my stay in Amritsar a memorable one. I also like to thank my senior research colleagues, Dr. Ajay Kumar, Mr(s) Balbir Singh, Vijay Kumar, Ravinder Sharma, Om Parkash, Sharad Thakur, Sunny Sharma, Ms(s) Annei Gogna, Manvi Kapoor and Ramanjeet Kaur for their cooperation and help during the course of this study. Thanks are also due to Dr. Vikas Gupta, Head, Department of Biotechnology, DAV College, Amritsar for his inspiration during the entire course of my work. I am grateful to my special friends Mr Gaurav Gulati, Dr Rakesh Sah and Shivendu Prashar for their encouragement at various stages of this study.

Finally, I express my sincere honest, heartfelt gratitude to my parents, my wife Preeti and son Ayush, my sisters and their kids Manisha, Shivam, Ishaan, Pari and brother in law Amit and Virender who’s tremendous encouragement support, prayer and love without which it would have been impossible for me to complete this task.

Finally I take this opportunity to express my gratitude to all the people who were involved directly and or indirectly in the completion of this dissertation work.

Date 23.5.12

Sumeet Gupta