Acknowledgement

First of all I wish to submit all my efforts and success before God Almighty for He who made me eligible and provided everything in my life.

I avail this opportunity to express my deep sense of genuine respect and heartfelt gratitude to my eminent Co-guide (Dr.) (Mrs) Priti somal, Scientist 'F', Dept. of Microbiology, Indian Institute of Integrative Medicine (IIIM), Jammu for her illuminating guidance and constant encouragement. Her keen interest and constructive criticisms during the course of the investigation and its proper presentation in form of present thesis will always be highly obliged and indebted. I also thank her for her motherly behavior and providing me a homely atmosphere at all the times I needed the most. Sure the knowledge and experience obtained from her will be a lamp unto my way ahead.

I am extremely grateful and indebted to Dr. (Mrs.) Archana Mehta, Lecturer, Dept. of Botany, Dr. H. S. Gour University, Sagar for having rendered her continuous guidance and untiring help during the course of the investigation. It is my good fortune and luck that I had an opportunity to work under such an excellent guide.

I have great pleasure in expressing my gratitude to Dr. G.N. Qazi, Director, Indian Institute of Integrative Medicine (IIIM), Jammu, for granting me the opportunity to carry out research work in the Biotechnology Division, IIIM, Jammu. I also express my thanks for his valuable comments and continuous encouragement throughout the investigation.
I extend my thanks and gratitude to Prof. S.P. Bajpai, Head and Dean, Dept. of Botany, Dr. H.S. Gour University, for his suggestions, co-operation and profound help throughout the investigation.

I express my sincere thanks to Prof. Pradeep Mehta for giving me his valuable time throughout the course of this work. I must also acknowledge deep appreciation and keen interest of him and also for his ever welcoming attitude for sorting out problems and careful examination of the thesis.

On my personal note, my special thanks is for my friend and colleague Ms. Surabhi Naik, whose constant moral support helped me in overcoming hurdles I faced during this investigation. Her joyful and enthusiastic nature always gave me comfort. It is she who made me meet to my co-guide, which showed me a path for doing Ph.D. I will always be indebted to her for all the help and care.

My thanks are reserved for my colleagues and friends Ms. Anania Arjuna and Ashish Pratap Singh, for their emulous help and healthy co-operation all through my work. Especially I should appreciate anania's patience for tolerating my jokes through out the course of investigation.

I would like to express my sincere thanks to Mr. Jasbir Singh (STA), IIIM, Jammu, for his help and providing me a good working environment in the lab. My thanks is also reserved for Mr. Prthvi Raj and Mr. Shimlu Ram, who always helped me for doing my official and lab work.

My heartfelt thanks are for Mr. Koushal Kumar, who was always ready to help me at all the odd times without any hesitation. This
work would have been more difficult, if he had not been there for me through out the investigation.

My thanks are also due for my colleagues Dr. (Ms.) Preeti, Ms. Sandeep, Ms. Monika, Mr. Shashi bhushan and Mr. Rohit for their kind help and company through out the course of investigation. I express my special thanks to research scholars, Mr. Jinu, Mr. Siddhart, Mr. Atanu, Mr. Sandeep, Mr. Kriti, Ms. Shruti and Ms. Lakshmi, Dept. of Botany, Dr. H. S. Gour University, Sagar, for their help and support during the investigation and my stay at sager.

My sincere thanks is for Mr. R.B.N Prasad, IICT, Hyderabad for doing the GC-MS analysis of the samples and Mr. R. P. Saini, Devan Breweries, Jammu for providing me the raw material for doing some part of the research work.

I express my sincere thanks and gratitude to all the staff of Bay-I for their kind help and encouragement during the course of my research work.

As a vintage, I have my deepest sense of affection, respect to my beloved parents and sisters whose co-operation and sacrifices for my studies, can never be paid off. Their love and blessings for me was the constant source of encouragement which added to my determination to complete the present investigation. It is they who partake more of the joy from my success than I.

My thanks also remain due for all those who have helped me knowingly or unknowingly in various ways to complete my research work successfully.

Place Sagar
Date 19-02-08

S.K. Venu Gopal