ACKNOWLEDGEMENT

I offer my most sincere gratitude to my Ph. D supervising guide Dr. Ramadasan Kuttan, Ph.D, Research Director, Amala Cancer Research Centre, who had guided me all the way through with his wisdom, knowledge and tremendous patience. With his enthusiasm, inspiration, and his great efforts to explain things clearly and simply made me complete this thesis work successfully. Throughout the period, he provided encouragement, sound advice, good teaching, and lots of good ideas. His confidence in me and the freedom he gave me to express my ideas and to work in my own way has exceptionally inspired and enriched my growth as a researcher.

I am keen to express my deep sense of gratitude to Dr. Girija Kuttan, Professor, Dept. of Immunology, Amala Cancer Research Centre, whose thoughtful advice and criticism helped me a lot. Her constant support, encouragement, sound advice and inspiration throughout the time helped me to complete my work.

I express my sincere gratitude to Dr. Jose Padikkala Ph. D, Dr. T. D Babu, Dr. Achuthan C Raghavamenon Ph. D, Dr. C. K. K. Nair and Dr. K. K. Janardhanan Ph. D, Professors, Amala Cancer Research Centre for their support, help and suggestions or creative criticism.

I express my sincere thanks to Padma Bhushan Rev. Fr. Gabriel CMI, Founder Director, Former Directors, Rev. Fr George Pius, Rev. Fr Paul Achandy CMI, Director Rev. Fr. Walter Thelappilly CMI, Amala Cancer Hospital and Research Centre for permitting me to carry out the work here.

I acknowledge M/s. OmniActive Health Technologies Pvt. Ltd., Mumbai, India, especially Dr. Jayant Deshpande and Mr. Abhijit Bhattacharya for supplying lutein and partial funding for the study. I am greatly thankful for their fruitful discussion and interest throughout this study.

Dr. Rammath V, Asso. Professor, Dept. Physiology, College of Veterinary and Animal Sciences, Mannuthy for his help and suggestions. I am thankful to Mr. M. Muthuvel, Radiation Safety Officer, Mr. K. Kathiresan and other members of Dept. Radiotherapy of Amala Cancer Hospital and Research Centre for their help in radiation studies.

I offer my special thanks to my colleagues Dr. Preethi, Ms. Firdous, Ms. Salini, Mrs. Chubicka, Mr. Liju, Mrs. Jeena, Mrs. Divya, Mrs. Binitha, Department of Biochemistry, Amala cancer Research Centre for their gracious
attitude and boundless help during my study. I express my sincere thanks to Mr. Siveen, Dr. Fijesh, Dr. Smina, Mr. Adil, Mr. Vipin, Ms. Lincy, Ms. Seema, Ms. Dhanya K C, Mrs. Lakshmi, Mr. Gopa Kumar and Mr. Sarath for their help during my study.

I am grateful to Mrs. Hemalatha, Mrs. Preetha. C.G, Mrs. Sandhya, Miss. Thankammani, Mrs. Sumathy staffs of Amala Cancer Research Centre for all the help they have provided to me.

I am deeply grateful to the Indian Council of Medical Research, New Delhi for providing financial support in the form of Junior Research Fellowship. I record my sincere thanks to Council of Scientific and Industrial research, India for awarded Senior Research Fellowship for completing the study.

I wish to thank everybody with whom I have shared experiences in life and all my teachers who inspired me to complete the study. I am tempted to individually thank all of my friends. I will simply say thank you very much to you all.

I wish to thank my family especially my parents, Mr. Raghavan E C and Mrs. Soumini Raghvan and my brothers and sister. They have always supported and encouraged me to do my best in all matters of life. To them I dedicate this thesis. Above all I thank God Almighty for the blessings and confidence shower on me to attain the goal.

Sindhu. E. R