

## Acknowledgments

I greatly appreciate Professor Hiroo Uchiyama, Professor Takahisa Suzuki, Professor Michihiko Kobayashi, and Professor Takayuki Hoshino, Institute of Applied Biochemistry, University of Tsukuba and Emeritus Professor Tadaatsu Nakahara, University of Tsukuba for their kind guidance of my doctoral thesis, for critical reading of the manuscript, and for helpful discussions. I am also grateful to Dr. Tatsuo Hoshino and Ms. Keiko Ichikawa, the Department of Applied Microbiology, Nippon Roche Research Center, Kamakura, Japan for multitudinous supports of this work and excellent laboratory assistance, and to Mr. Noboru Nakayama and Ms. Yoshiko Itezono, the Department of Chemistry, Nippon Roche Research Center for mass spectrometry and  $^{13}\text{C}$  nuclear magnetic resonance spectroscopy analyses. I acknowledge Dr. Manfred Eggarsdorfer and Dr. Luis Pasamontes, the Division of Vitamins and Fine Chemicals, F. Hoffmann-La Roche Ltd., Kaiseraugst, Switzerland for warm support of the project.