

Preface

Enzyme biochemistry and biotechnology

A collection of papers dedicated to Professor Dr. Kenji Soda in honor of his 70th birthday

Dr. Kenji Soda, Emeritus Professor of Kyoto University, Japan has greatly contributed to the field of the structure and function of microbial enzymes, in particular, pyridoxal enzymes, NAD⁺ enzymes, and flavin enzymes, and the enzymatic syntheses of various chiral compounds.

This Special Issue is fully dedicated to Dr. Soda's 70th birthday and to his contribution to the scientific area of enzyme biochemistry and biotechnology.

Professor Dr. Kenji Soda



Professor Dr. Kenji Soda was born in Aichi Prefecture on 7 February 1933. He graduated from Faculty of Agricultural and Biological Chemistry, Kyoto University, Japan in 1956 and continued his studies on microbial biochemistry, in particular microbial aminotransferases, under the supervision of the late Professor Dr. H. Katagiri. He graduated from the Doctor Course of Agricultural and Biological Chemistry, Kyoto University, Japan and was awarded the degree of Ph.D. in 1961.

Dr. Soda started academic career as an instructor of the Department of Agricultural and Biological Chemistry, Kyoto University to study microbial biochemistry and biotechnology with the late Professor Dr. K. Ogata, and Professor Dr. T. Tochikura in 1962. During 1963 and 1965, on leave from Kyoto University he stayed at Tufts University School of Medicine, Boston, Mass, USA as a postdoctoral fellow of Department of Biochemistry, and studied the biochemistry of amino acids with the late Professor Dr. A. Meister. In 1965, he was promoted to Associate Professor at the Laboratory of Microbial Biochemistry of the Institute for Chemical Research, Kyoto University after returning home. In 1981, Dr. Soda was appointed full Professor of Kyoto University, and directed the Laboratory of Microbial Biochemistry, Institute for Chemical Research. At the Graduate School of Agriculture, Kyoto University, he gave lectures on Microbial Biochemistry and Applied Microbiology and supervised the dissertation works of many graduate students.

He devoted himself to the Japanese Biochemical Society and officiated as President of the Society between 1992 and 1993. He was also the trustee of Japan Society of Bioscience, Biotechnology, and Agrochemistry, Vitamin Society of Japan, and others. Dr. Soda served as President of the Vitamin Society of Japan from 1999 to 2003. He was awarded the Prize of Agricultural Chemical Society of Japan for Young Scientists in 1969, the Prize of Vitamin Society of Japan in 1985, and the Prize of the Japan Society of Bioscience, Biotechnology and Agrochemistry in 1992.

He is also known as an alpinist. He was the president of Mountaineering Club of Kyoto University, and the trustee of Academic Alpine Club of Kyoto.

For the past 40 years, he extensively investigated various aspects of microbial biochemistry. He studied the structure and function of microbial biocatalysts, in particular, pyridoxal enzymes, NAD^+

enzymes, and flavin enzymes: he characterized L-lysine ϵ -aminotransferase, D-amino acid aminotransferase, kynurenine aminotransferase, arginine racemase, alanine racemase, amino acid racemase with low substrate specificity, methionine γ -lyase, leucine dehydrogenase, alanine dehydrogenase, phenylalanine dehydrogenase, meso- α,ϵ -diaminopimelate D-dehydrogenase and others. He also carried out the research on the metabolism and biofunction of selenium-containing amino acids and peptides. He has found new enzymes participating in the selenium metabolism such as selenocysteine β -lyase and a new pathway of the microbial fluorine metabolism. He synthesized and characterized novel selenium-peptides serving as an antioxidant such as glutaselenone. He also engaged himself in the characterization and application of new biomolecules. For example, he elucidated the molecular structure and functions of thermostable and thermolabile enzymes and studied their application. He established efficient systems for the enantioselective amino acid production with these enzymes. He discovered and characterized a few halo acid dehalogenases, and studied their structure and functions as well as new oxygenases and oxidases acting on nitro compounds. He modified and improved their properties by protein engineering and developed a new procedure to effectively decompose the nitro compounds in wastewater by means of these enzymes.

Dr. Soda, Professor of Microbial Biochemistry retired to be appointed as a Professor Emeritus on the 31st of March, 1996 after having completed his 35 years of service at Kyoto University. He moved to Kansai University (Osaka, Japan) to become Professor of Laboratory of Protein Engineering, Department of Biotechnology, Faculty of Engineering on the 1st of April, 1996. In 1997, he organized Laboratory of Biomolecular Science and Technology, and was awarded the Purple Ribbon Medal from the Government of Japan. For 7 years in Kansai University, he studied the enzymes from psychrophile and hyperthermophile, in particular, pyridoxal, NAD^+ , and NADP^+ enzymes: he characterized alanine aminotransferase, 2-aminobutyrate aminotransferase, aspartase, alcohol dehydrogenase, aldehyde dehydrogenase, valine dehydrogenase, threonine dehydrogenase, glutamate dehydrogenase, alanine racemase, glutamate racemase, racemase with low substrate specificity, arginine racemase, γ -guanidinobutyrase, and others. He was also

interested in and carried out the research on the distribution and biofunction of D-amino acids in fermented foods, especially Japanese sake, vinegar, wine, beer, and various plants. Dr. Soda, Professor of Laboratory of Biomolecular Science and Technology retired on the 31st of March, 2003 after having completed his 7 years of service at Kansai University, and now serves as a part-time professor to give a lecture and

participate in research. Dr. Soda is also enjoying hiking and mountaineering in Japan and overseas countries.

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