NUS National University of Singapore | Department of Pharmacy Faculty of Science

5 pm, Mon, 14th Aug 2017
S4A Level 3 Rooms A & B

Integrated solutions to non-natural amino acids: selection and combination of synthetic technology and biotechnology

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Biography: Dr Masahiko Yamada completed his PhD at the Graduate School of Engineering, Kyoto University, majoring in Organic Chemistry in March 1987 with Profs Iwao Tabushi and Hisanobu Ogoshi. With extensive experience with Kaneka Corporation since 1989, Dr Yamada has worked on various areas. He has been awarded Research Fellowship for Young Scientist Japan Society for Promotion of Science in 1987. He was a Research Fellow at Harvard Medical School with Prof Christopher Walsh. In 2011, he was promoted to Distinguished Scientist in Kaneka, in NPO Kinki Bio-Industry Development Organization Background) Organic Chemistry, Biochemistry & Pharmacology (National Qualification) Licensed Guide followed by the prestigious role as Deputy Chairman.

Abstract: Recent progress in medicinal chemistry has resulted in the frequent use of non-natural α-amino acids as pharmaceutical substances, typically in protease inhibitors1,2. These non-natural α-amino acids are derived from natural amino acids, thus showing structure similar but different from natural L-amino acids. While amino acids containing aromatic groups can be produced effectively and relatively easily by asymmetric catalysis3, such new and complex aliphatic amino acids often require specific methodologies.

Here we would like to articulate our technology to several non-natural aliphatic α-amino acids by selecting the optimum methodology covering both our noted biotechnology and synthetic technology with asymmetric induction, chiral pool, and dynamic resolution1-2. The application of the combination of biotechnology and synthetic technology, our long time experience, will be also illustrated in protease inhibitor projects. Some of these examples are being practiced in Kaneka Singapore.

References:

1. M. Sugawara, T. Ohishi, and M. Yamada ACS Symposium Series Vol. 1009, 2008, 337.
2. M. Yamada Pharmaceutical Technology, API Synthesis and Formulation 2009, Sept 1.

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