

Development of Chemo-Enzymatic Manufacturing Method for Deoxynucleosides

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2'-deoxynucleosides(dNus) is used widely in the field of gene therapy, biological research and medical diagnosis. But the dNus supply depends on salmon milt, development of an effective large-scale production method that avoids the dependence of natural resources. We developed a novel chemo-enzymatic process, applicable to industrial manufacturing of all four dNus. The method consists of three distinctive technologies: (i) stereocontrolled synthesis of 2-deoxyribose 1- α -phosphate (dRP) by crystallization-induced asymmetric transformation; (ii) an efficient method to expedite an enzymatic conversion by adding Mg(OH)₂; (iii) development of a new enzyme for the enzymatic synthesis of 2'-deoxycytidine. Additionally, we are taking the method a step further, applying it to the synthesis of unnatural deoxynucleosides.

