

## A Novel Enzyme Preparation for D-Amino Acid Production

D-amino acids are very important chiral intermediates utilized in the development of various pharmaceutical compounds including antibacterial agents and anti-diabetic agents.

D-amino acids are currently produced by a chemical synthesis process because production of D-amino acids by fermentation is known to be very difficult. However since chemical synthesis of amino acids results in a chiral mixture of D- and L- amino acids, several methods have been developed for the resolution of DL-amino acids. As an enzymatic method, L-aminoacylase has been used for selection and extraction of D-amino acids from a racemic mixture at a commercial scale (Figure 1). However, there are some problems associated with this process: low yield of the final product, complexity of the process and poor cost performance.

The use of D-aminoacylase in a direct selection process to separate D-amino acids from a racemic mixture of amino acids is described in Figure 2. Although the advantages of this process have been known for years, the unavailability of a commercial source for the enzyme has prevented its use on a large scale.

Dr. Moriguchi at Oita University in Japan has described the isolation of D-aminoacylase from the bacterium *Alcaligenes sp.* (*Protein Expression and Purification*, 7,395(1996)). Amano Enzyme Inc. has cloned the gene using a recombinant *E. coli* system and has successfully developed D-aminoacylase as a commercial product. D-aminoacylase "Amano" efficiently hydrolyzes N-Ac-D-amino acids, especially N-Ac-D-methionine, N-Ac-D-phenylalanine and N-Ac-D-leucine to D-amino acids and acetic acids. D-aminoacylase "Amano" should prove beneficial for the commercial production of D-amino acids. (Patent No. WO00/78926)

Figure 1 : Production of D-Amino acid with L-Aminoacylase

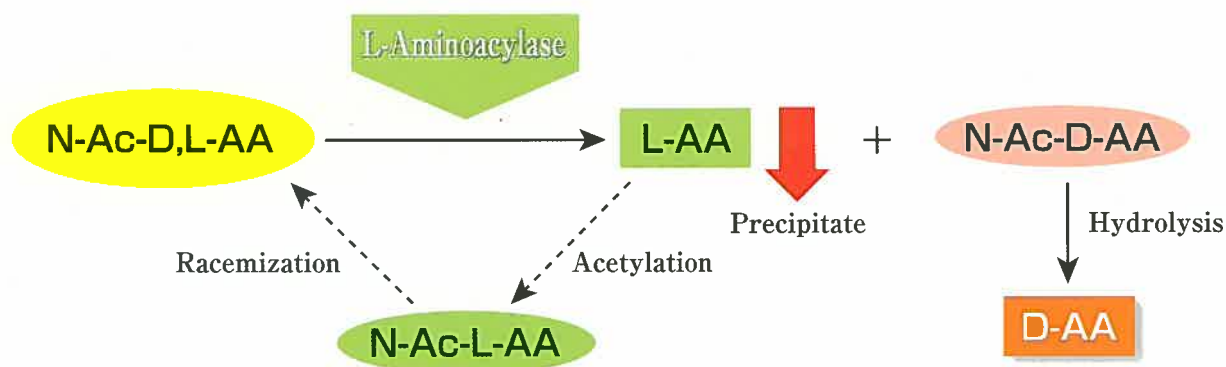


Figure 2 : Production of D-Amino acid with D-Aminoacylase

