

## Biologically active D-amino acids

### *Editorial*

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Until the 1970s D-amino acids were not considered essential for any vital function in living organisms, which were thought to consist almost entirely of L-amino acids. D-amino acids had been considered exceptional amino acids that existed only in prokaryotes and some lower organisms. However, the development and improvement of analytical instruments and methods over the past few decades have revealed that D-amino acids *are* present in organisms in far greater amounts and extents than previously considered. It has become clear that D-amino acids exist either in free form or protein-bound form in microorganisms, plants, invertebrates, and vertebrates, including humans. The physiological function and pathological significance of D-amino acids occurring principally in the nervous and endocrine systems have been extensively investigated. Some D-amino acids have important physiological functions, and physiological systems for synthesis and degradation of D-amino acids have also been found. D-Serine has been found in the mammalian central nervous system, D-aspartate in the mammalian neuroendocrine organs, D-alanine and D-aspartate in aquatic animals.

This special issue of the journal *Amino Acids* reports some of the most recent research findings on D-amino acids, many of which were reported at the 9<sup>th</sup> International Congress on Amino Acids in Vienna, Austria, in August 2005. The readers will find what kinds of research are being conducted in the field of D-amino acids and the significance of D-amino acids in biological systems. We hope that these proceedings will stimulate the readers as much as did the participants at the International Congress on Amino Acids in Vienna.

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