Discovery of a Substance to Decompose a Causative Substance of Alzheimer Disease

The Laboratory for Proteolytic Neuroscience (Laboratory Head: Dr. Takaomi C. Saido, BSI), RIKEN Brain Science Institute, have discovered a physiologically active substance that controls the decomposition of a causative substance of Alzheimer disease. Alzheimer disease is expressed due to the accumulation of a protein called amyloid β peptide (Aβ) in the brain.

A research team had previously discovered the enzyme neprilysin that degrades Aβ, and showed that when its activity decreased the Aβ level in the brain increased. The researchers also demonstrated that Aβ accumulation could be suppressed through an experimental genetic treatment.

The researchers this time sought a pharmacological method for regulating the neprilysin activity in the brain without using a surgical method such as genetic treatment. As a result, they discovered that "somatostatin," a kind of neuropeptide (physiologically active substance), increased the activity of neprilysin and decreased the level of Aβ. It was also found that somatostatin selectively controls the level of a highly pathogenic Aβ strain (Aβ42).

Furthermore, since somatostatin expresses physiological activity after combining with a somatostatin receptor on the surface of cells, the production of a new medicine targeting this receptor is possible. This research is expected to open the way for the elucidation of the cause of sporadic Alzheimer disease that generates a large number of patients.

The research results were published in the online version of the U.S. science journal "Nature Medicine" dated March 20.
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