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## New therapeutic strategy for amino acid medicine: glycine improves the quality of sleep.

Bannai M<sup>1</sup>, Kawai N.

⊖ Author information

<sup>1</sup>Frontier Research Laboratories, Institute for Innovation, Ajinomoto Co., Inc., Japan.

makoto\_bannai@ajinomoto.com

### Abstract

Glycine is a non-essential amino acid that has indispensable roles in both excitatory and inhibitory neurotransmission via N-methyl-D-aspartate type glutamate receptors and glycine receptors, respectively. We recently reported that glycine ingestion before bedtime significantly ameliorated subjective sleep quality in individuals with insomniac tendencies. Oral administration of glycine to rats was found to induce a significant increase in the plasma and cerebrospinal fluid glycine concentrations and a significant decrease in the core body temperature associated with an increase in cutaneous blood flow. The decline in the core body temperature might be a mechanism underlying glycine's effect on sleep, as the onset of sleep is known to involve a decrease in the core body temperature. Moreover, a low core body temperature is maintained during sleep in humans. Pharmacological studies investigating the mechanisms of glycine on sleep were also performed. In this review, we will describe both our recent findings regarding how and where orally administered glycine acts and findings from our rat study and human trials.

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