

# Effects of dimethylaminoethanol pyroglutamate (DMAE p-Glu) against memory deficits induced by scopolamine: evidence from preclinical and clinical studies.

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## Source

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## Abstract

### *RATIONALE:*

Dimethylaminoethanol pyroglutamate (DMAE p-Glu) is a compound resulting from the reaction between dimethylaminoethanol (an indirect precursor of acetylcholine) and pyroglutamic acid (a cyclic derivative of glutamic acid having procholinergic properties and promnesic effects in both animals and man).

### *OBJECTIVES:*

The present study undertook preclinical and clinical evaluations to test a potential therapeutic utility for DMAE p-Glu in cognitive impairments related to central cholinergic deficit.

### *MATERIALS AND METHODS:*

In preclinical study, DMAE p-Glu was studied in rats by intracerebral microdialysis in conscious freely moving animals, on performance of rats in the Morris water maze test of spatial memory, and on the deficit in passive avoidance behavior induced by scopolamine. The clinical study examined the effect of DMAE p-Glu on cognitive deficits induced by an intravenous injection of scopolamine in healthy young male subjects.

### *RESULTS:*

In rat experiments, DMAE p-Glu increased the extracellular levels of choline and acetylcholine in the medial prefrontal cortex, as assessed by intracerebral microdialysis, improved performance in a test of spatial memory, and reduced scopolamine-induced memory deficit in passive avoidance behavior. Clinical study results show that scopolamine induced a memory deficit and that DMAE p-Glu produced a significant positive effect on scores in the Buschke test, as well as a slight but significant difference on choice reaction time.

### *CONCLUSION:*

These results indicate that DMAE p-Glu reduces the deleterious effect of scopolamine on long-term memory in healthy volunteers and suggest that DMAE p-Glu might be effective in reducing memory deficits in patients with cognitive impairment.