



## Huperzine A Reverses Cholinergic Dysfunction Induced by Acute Hypobaric Hypoxia in Rats

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**SUMMARY.** The protective effects of huperzine A on cholinergic dysfunction associated with acute hypobaric hypoxia were investigated in rats. Rats were exposed to simulated hypobaric hypoxia at 6,000 m in a specially fabricated animal decompression chamber while receiving huperzine A orally once per day at the dose of 0.1 mg/kg body weight. After exposure for 5 days, the animals were sacrificed and specific markers for the cholinergic neurons and their function, such as acetylcholine, choline acetyltransferase (ChAT), acetylcholinesterase and  $\alpha 7$  nicotinic acetylcholine receptors ( $\alpha 7$  nAChR), were studied in the cortex and hippocampus. Huperzine A was associated with increased levels of acetylcholine caused by the decrease in activity of acetylcholinesterase and the up-regulation of ChAT in the cortex and hippocampus of rats. There were also improvements in the efficiency of cholinergic synaptic transmission through the increased  $\alpha 7$  nAChR. These results suggest that supplementation with huperzine A reversed cholinergic dysfunction induced by acute hypobaric hypoxia.

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**KEY WORDS:** Huperzine A, Acute hypobaric hypoxia, Cholinergic dysfunction, Hippocampus.

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