

**EFFECTS OF PROTEIN KINASE A INHIBITOR (H-89) ON SPATIAL
MEMORY AND EXPRESSION OF CHOLINE ACETYLTRANSFERASE
(ChAT) AND VESICULAR ACETYLCHOLINE TRANSPORTER
(VAcHt) PROTEINS**

MOHAMMAD SHARIFZADEH, KURDASTAN SHARIFZADEH
and MOHAMMAD H. GHAREMANI

Department of Pharmacology and Toxicology, Faculty of Pharmacy, Tehran
University of Medical Sciences, P.O. Box 144155-6451, Tehran, Iran

In this study we investigated the effects of intra-hippocampal infusion of H-89 as a protein kinase A inhibitor on spatial memory in Morris water maze. Rats were trained for 3 days; each day included two blocks and each block contained 4 trials. Stereotaxic surgery was performed soon after last trials on third day. Animals were tested 48 h after surgery. Intra-hippocampal infusion of H-89 (1, 2.5 and 5 $\mu\text{M}/\text{rat}$) showed significance alterations on escape latency and traveled distance in Morris water maze. The response was dose-dependent and the maximum effect was obtained by 5 μM of H-89. Furthermore, immunohistochemical experiments showed that the H-89 infusion also reduced the number of labeled VAcHt- and ChAT-containing neurons in hippocampus. These results indicated that the protein kinase A is probably involved in spatial memory. Moreover, H-89-induced memory deficit could be partially mediated by the inhibition of choline acetyltransferase (ChAT) and vesicular acetylcholine transporter (VAcHt) expression.