분류번호	Ⅱ-P-7

Involvement of the cAMP Effector System in Dopamine and Acetylcholine Release from Rat Neostriatal Slices

Hwa-Jung Kim[a,o] and Molly H. Weiler[b]

[a]Collge of Pharmacy, Ewha Womans University, Seoul, 120-750, Korea, and [b]Hazleton Wisconsin Inc., Madison, WI 53706, USA

The involvement of the cyclic AMP (cAMP) effector system in the release of endogenous dopamine and acetylcholine from the rat neostriatum was assessed. Forskolin, an activator of adenylate cyclase, was used to enhance cAMP production, and the consequence of this enhancement on the spontaneous and potassium stimulated release of dopamine and acetylcholine was evaluated. Neostriatal slices were prepared from Fischer 344 rats and after a preincubation period the release of each endogenous neurotransmitter was measured from the same slice preparation. To measure acetylcholine release the slice acetylcholinesterase (AChE) activity was inhibited with physostigmine, but the release from slices with intact AChE activity was also determined (choline, instead of acetylcholine was detected in the medium). Under both conditions forskolin induced a significant dose-dependent increase in the potassium-evoked release of dopamine. In the same tissue preparations the release of neither acetylcholine (AChE inhibited) nor choline (AChE intact) was affected by forskolin. The results indicate that the cAMP second messenger system is involved in neuronal mechanisms that enhance neostriatal dopamine release, but stimulation of this second messenger by forskolin does not further enhance neostriatal acetylcholine release.