

Continuous measurement of net potassium movements in rat brain cortex suspensions. Effects of glutamate, veratridine, creatine and other substances

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Net K fluxes in in vitro suspensions of sliced rat brain cortex were studied by means of a K-sensitive electrode. When incubation was in 3 mM K, a net K efflux occurred. It could be resolved into two first-order rate constants: $k_1=0.486 \text{ min}^{-1}$, and $k_2=0.0102 \text{ min}^{-1}$, that originated from compartments that contained 18% and 82% of tissue K, respectively. k_1 Was suppressed by tetrodotoxin (TTX), and k_2 was increased 38-fold by veratridine. The latter effect was blocked by TTX, methylphenidate (1 mM), creatine (25 mM), apamin (50 nM), quinine (100 μM), verapamil (22 μM) or D-600 (38 μM). Net K loss was greatly increased by 1 mM ouabain, and enhanced by sodium azide plus iodoacetamide, but not by 0.1 M ethanol. Glutamate (5 mM) induced a considerable and rapid net uptake of K, while aspartate or N-methylaspartate increased K efflux. © 1986.