A KINETIC MODEL OF SYNAPTIC TRANSMISSION ON INTERCELL INTERACTION

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S u m m a r y

We present a model of synaptic transmission on the intercell interaction in acetylcholine synapses. The following processes are considered: the time-dependent release of a mediator in a synaptic cleft, the binding of a mediator with a receptor, the formation of mediator-receptor complexes, and the release of a mediator from a cleft due to the diffusion, reversible capture by a presynaptic membrane, and, mainly, the decay in the presence of the enzyme acetylcholinesterase. To describe the changes of the concentrations of a mediator, receptors in the ground state, and excited mediator-receptor complexes, we have constructed and studied a system of three nonlinear differential equations and have proved that the singular point of a stationary state for the synaptic transmission is a stable node.