

Synchronous and asynchronous quantal release at synapses

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Abstract

© 2015, Pleiades Publishing, Ltd. According to the modern conceptions of the processes of synaptic transmission of excitation there are two forms of quantal neurotransmitter release evoked by the neural stimulus—phasic synchronous and delayed asynchronous release differentiated by the intensity and temporal parameters of quanta secretion. This review is dedicated to the analysis of temporal characteristics of evoked synchronous and delayed asynchronous release of neurotransmitter quanta at chemical synapses. The data indicative of different mechanisms of realization and modulation of these types of the evoked quantal secretion are discussed. The importance of temporal parameters of neuronal secretion for maintenance of effective synaptic transmission of excitation and alteration of these parameters in some pathologies is considered.

<http://dx.doi.org/10.1134/S1990747815050025>

Keywords

kinetics of secretion of neurotransmitter quanta, phasic synchronous and delayed asynchronous quantal release, synaptic transmission