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Exhaustion of neurotransmitters storage

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Key words: secretory granules, synaptic vesicles, neuropeptides

Goal of the study: To demonstrate that neurotransmitters have a capacity to end.

Introduction: Synaptic vesicles are located on presinaptic nerve terminals that accumulate high quantities of neurotransmitters, which are subsequently secreted by fusion with the presynaptic plasma membrane. Neuropeptides are stored in this dense core vesicles. Because of the vesicular storage of neuropeptides when a neuron is activated it rapidly release them in a relatively large bolus

Material and methods: There were analyzed articles from PubMed and ScienceDirect database from the last 5 years, 2019-2024, mentioned such words as “neurotransmitters”, “synaptic vesicles”, “secretory granules” [1], and also up to 2019, representing the relevance of today [2-4].

Results: Neurotransmitters mediated neural communication. Secretory granules store release neuropeptides in response to various stimuli synaptic vesicles undergo. To support rapid and repeated rounds of release, synaptic vesicles undergo a trafficking cycle in the nerve terminal, on the cell membrane [5], and mitochondria due to Ca++ mpt pore [6], which has important clinical significance for the creation of artificial hibernation for the purpose of restoration and neuropeptides, neurotransmitters, neuromodulators. Including reducing the disorder of pain signal transmission in the chain of Transduction, Transmission, Modulation, Perception and many others [7-10]. Synaptic vesicle recycling is one of the best-studied cellular pathways. Many of the proteins involved are known, and their interections are becoming increasingly clear. Synaptic vesicles bind soluble cofactor proteins, with low affinity, and thus control theirs availability in the synapse, forming a buffer for cofactor proteins.

Conclusion: For example in glutamatergic nerve endings, synaptic vesicle accumulate and store a proplrtion of the cellular glutamate pool and, in response to appropriate signals release glutamate into the synaptic cleft by exocytosis. Glutamate accumulation is accomplished by virtue of a glutamate uptake system [11] present in the synaptic vesicle membrane. The uptake system consists of a transport protein notably specific for glutamate which provides the coupling between ATP hydrolysis and glutamate transport. Having the goal of maintaining homeostasis as the basis of integral of functional systems taking into account clinical pathophysiology [12-19]. In mathematical and geometric interpretations [18] to improve Total Quality Management (TQM) in diagnostics based on markers [20,21] and of treatment in medicine and preserving human medical resources [22,23].

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