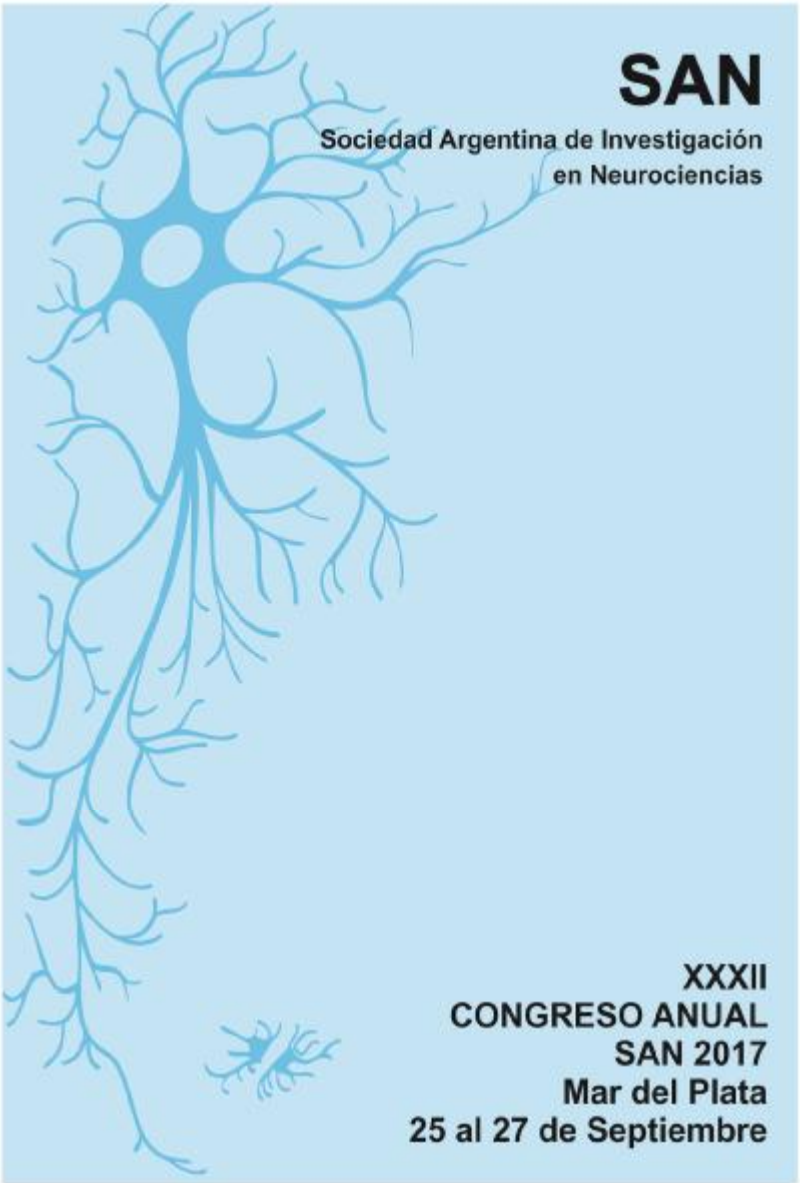

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Sociedad Argentina de Investigación en Neurociencias

XXXII CONGRESO ANUAL SAN 2017

Mar del Plata

25 al 27 de Septiembre

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P163.-Activation of presynaptic GABAB receptors minimize depression and enables sustained transmission at high rate stimulation of cholinergic olivocochlear-hair cell synapses

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During development, medial olivocochlear (MOC) neurons transiently innervate cochlear inner hair cells (IHCs). Although acetylcholine (ACh) is the main neurotransmitter at this synapse, an abundant GABA innervation is also present. Electrical stimulation of MOC efferent fibers triggers the release of ACh, but also activates presynaptic GABAB receptors, that in turn reduce the amount of ACh released. GABA-mediated mechanism is through the inhibition of P/Q type Ca2+ channels. We are now studying the consequences of GABAB-mediated inhibition in the short-term plasticity of this synapse. Inhibitory synaptic currents (IPSC) were recorded in IHCs of acutely isolated organs of Corti at P9-P11, while MOC fibers were electrically stimulated. In control condition, 10 pulses applied at high frequency (50 Hz) resulted in a progressive decrease on IPSC amplitudes throughout the train (P10/P1= 0.54). On the contrary, the specific GABAB agonist baclofen, increased the facilitation rate and eliminated depression at the same frequency (P10/P1= 1). Moreover, application of CGP35348, a GABAB antagonist, produced a bigger depression even at low stimulation frequencies (10Hz). These results suggest that the activation of presynaptic GABAB receptor, minimizes depression and would enable sustained transmission during high-frequency stimulation at the MOC-inner hair cell synapse.