Targeting Topics: Recent Scientific References

Summarized by Matthew Kohls

GABAergic septohippocampal neurons are not necessary for spatial memory

Pang KCH, Nocera R, Secor AJ, Yoder RM
Hippocampus 11:814-827, 2001.

The medial septum and diagonal band of Broca (MSDB) are necessary for spatial memory. Both cholinergic and GABAergic neuronal populations are present in the MSDB. 192-Saporin (Cat. #IT-01) was used to eliminate cholinergic populations and kainic acid was used to reduce numbers of GABAergic neurons. Both agents were injected (independently or in combination) into the medial septum and each diagonal band of rats (192-Saporin 250 ng MS, 150 ng DB) to determine the importance of GABAergic neurons in the MSDB for spatial memory. The results showed elimination of GABAergic neurons has no impact on spatial memory, while elimination of cholinergic neurons has a mild impact.

Selective immunolesioning of cholinergic neurons in nucleus basalis magnocellularis impairs prepulse inhibition of acoustic startle

Ballmaier M, Casamenti F, Zoli M, Pepeu G, Spano P
Neurosci 108(2):299-305, 2001.

One of the measures for schizophrenia is a deficit in sensorimotor gating (the ability of the brain to filter sensory input to focus on selective stimuli) measured by prepulse inhibition (PPI) of the startle reflex. The authors injected 300 nl of 400 ng/µl 192-Saporin (Cat. #IT-01) into each side of the nucleus basalis magnocellularis (NBM) in rats to examine the effect of NBM cholinergic neuron elimination on the startle reflex. The data show a significant, persistent disruption of the PPI independent of the amplitude of the startle reflex. This suggests the NBM may play an important role in information processing in schizophrenia.

Lack of effect of moderate Purkinje cell loss on working memory

Wrenn CC, Wiley RG
Neurosci 107(3):433-45, 2001.

When 192-Saporin (Cat. #IT-01) is injected intracerebroventricularly, some p75-expressing cerebellar Purkinje cells are eliminated along with cholinergic neurons. To verify that the effects of basal forebrain lesions on working memory were not caused by loss of these Purkinje cells the authors compared doses of 1 µg OX7-SAP (Cat. #IT-02) and either 2 µg or 4 µg of 192-Saporin injected into the lateral ventricle. The data show that although similar amounts of Purkinje cells were eliminated by OX7-SAP and the lower dose of 192-Saporin, no working memory deficits resulted. Only the 4-µg dose of 192-Saporin produced working memory deficits, they conclude that this is not due to Purkinje cell loss, but the loss of cholinergic neurons.

Central cholinergic depletion induced by 192 IgG-saporin alleviates the sedative effects of propofol in rats

Pain L, Jeltsch H, Lehmann O, Lazarus C, Laalou FZ, Cassel JC
Brit J Anaesth 85(6):869-73, 2000.

In order to examine the effect of cholinergic depletion on the sedative potency of propofol in rats the authors injected 1 µg of 192-Saporin (Cat. #IT-01) into each lateral ventricle. The findings indicate a ~50% reduction in sedative potency in lesioned rats.

Transverse patterning reveals a dissociation of simple and configural association learning abilities in rats with 192 IgG-saporin lesions of the nucleus basalis magnocellularis

Butt AE, Bowman TD
Neurobiol Learn Mem 77:211-233, 2002.

Using 80 ng bilateral infusions of 192-Saporin (Cat. #IT-01) into each of the medial and lateral target sites of the nucleus basalis magnocellularis (NBM) in rats, the authors demonstrate that lesioning the cholinergic systems of the NBM impairs a more complicated learning technique, while leaving simple association learning intact. The results also show that the transition between these two learning strategies is impaired in lesioned animals.

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