

Targeting Topics: Recent Scientific References

Reviewed by Matthew Kohls

Cortical cholinergic deficiency enhances amphetamine-induced dopamine release in the accumbens but not in the striatum

Mattsson A, Olson L, Svensson TH, Schilström B
Exp Neurol [Epub Jul 24], 2007.

Previous data have implicated cholinergic dysfunction in the pathogenesis of schizophrenia. Here the authors investigated whether increased amphetamine-induced release of dopamine was a response to cortical cholinergic denervation. Rats received bilateral 0.067 μg -injections of 192-IgG-SAP (Cat. #IT-01) into the nucleus basalis magnocellularis, and dopamine release was monitored in the nucleus accumbens and striatum. Surprisingly, the increased dopamine release was not linked to loss of cholinergic neurons, but to blocking of muscarinic receptors.

Neonatal basal forebrain cholinergic hypofunction affects ultrasonic vocalizations and fear conditioning responses in preweaning rats

Ricceri L, Cutuli D, Venerosi A, Scattoni ML, Calamandrei G
Behav Brain Res 183(1):111-117, 2007.

In order to expand on previous work investigating the effect of early cholinergic lesions on processing of aversive stimuli the authors administered 0.21 μg of 192-IgG-SAP (Cat. #IT-01) into the third ventricle of 7 day-old rat pups. One unexpected result in lesioned animals was the enhancement of fear-conditioned responses that are dependent on the hippocampus. The authors discuss several theories addressing the implications of these data.



Psst. The film noir classic *Gangsta napped* through in last issue is...*Out of the Past* with Robert Mitchum and Jane Greer

Ketanserin-induced baroreflex enhancement in spontaneously hypertensive rats depends on central 5-HT(2A) receptors

Shen FM, Wang J, Ni CR, Yu JG, Wang WZ, Su DF
Clin Exp Pharmacol Physiol 34(8):702-707, 2007.

Ketanserin is an antihypertensive drug that effectively lowers blood pressure, decreases blood pressure variability, and enhances blood pressure response in spontaneously hypertensive rats. Using the fact that ketanserin is a selective 5-HT_{2A} antagonist, the authors investigated which of these effects utilized the 5-HT_{2A} receptor. Following a 5-nmol ventricular injection of anti-SERT-SAP (Cat. #IT-23) the blood pressure parameters modified by ketanserin were monitored. The data suggest that the baroreflex sensitivity-enhancing effects of ketanserin use the 5-HT_{2A} pathway, but antihypertensive effects follow a different route.

Experimental dissociation of neural circuits underlying conditioned avoidance and hypophagic responses to lithium chloride

Rinaman L, Dzmura V
Am J Physiol Regul Integr Comp Physiol [Epub Aug 1], 2007.

Lithium chloride (LiCl) is frequently used to study neural attributes of "sickness behavior." Previous work by these authors showed that noradrenergic neurons in the nucleus of the solitary tract (NST) are involved in the inhibition of food uptake by cholecystokinin. Here, 20 ng total of anti-DBH-SAP (Cat. #IT-03) was injected into the NST of rats. Lesioned animals demonstrated significantly reduced inhibition of food intake in response to LiCl, but conditioned flavor avoidance was left intact.



Selective hippocampal cholinergic deafferentation impairs self-movement cue use during a food hoarding task

Martin MM, Wallace DG
Behav Brain Res 183(1):78-86, 2007.

There are conflicting data surrounding the role of the septohippocampal system in spatial orientation. The authors suggest that the presence of spatial clues during some of these tests may skew those results. Rats were injected with a total of 0.35 μg of 192-IgG-SAP (Cat. #IT-01) into the medial septum. Lesioned animals had more difficulty navigating by self-movement cues, but the ability to use environmental cues was left intact. These experiments demonstrate that rats can use environmental information to compensate for loss of circuits that analyze self-movement.

Behavioral and immunohistological effects of cholinergic damage in immunolesioned rats: Alteration of c-Fos and polysialylated neural cell adhesion molecule expression

Chambon C, Paban V, Manrique C, Alescio-Lautier B
Neuroscience 147(4):893-905, 2007.

In this work the authors looked to expand the knowledge of molecular events and brain structure changes following cholinergic immunolesion.

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