

Targeting Topics: Recent Scientific References

(continued from page 3)

Cholinergic Deafferentation of Prefrontal Cortex Increases Sensitivity to Cross-Modal Distractors during a Sustained Attention Task

Newman LA, McGaughy J

J Neurosci 28(10):2642-2650, 2008.

The authors injected 5 ng of 192-IgG-SAP (Cat. #IT-01) into the prefrontal cortex of rats to investigate the effect of cholinergic loss on distractors to attentional demand. Where all animals experienced impaired performance in the presence of visual distractions, lesioned animals were more sensitive to auditory distractions. While these results indicate compromised top-down processing, lesioned animals showed improved performance in bottom-up processing, possibly caused by a shift in circuit dynamics after the lesion.

Effects of ibotenate and 192-IgG-saporin lesions of the nucleus basalis magnocellularis/substantia innominata on spontaneous sleep and wake states and on recovery sleep after sleep deprivation in rats

Kaur S, Juneak A, Black MA, Semba K

J Neurosci 28(2):491-504, 2008.

The caudal basal forebrain of rats was lesioned with 0.26- μ g bilateral injections of 192-IgG-SAP (Cat. #IT-01) in order to examine the role of this area of the brain in several facets of sleep behavior. The results suggest that cholinergic neurons and non-cholinergic neurons in the basal forebrain play different, but important roles in non-rapid eye movement sleep and EEG delta power

after sleep loss. Non-cholinergic basal forebrain neurons inhibit delta waves, whereas cholinergic neurons promote wakefulness.



Elimination of rat spinal substance P receptor bearing neurons dissociates cardiovascular and nocifensive responses to nicotinic agonists

Khan IM, Wart CV, Singletary EA, Stanislaus S, Deerinck T, Yaksh TL, Printz MP

Neuropharmacology 54(2):269-279, 2008.

The intrathecal (IT) administration of nicotinic agonists produces both nocifensive behavior and cardiovascular responses. In this work the authors treated rats with 10 μ l of 10- μ M SP-SAP (Cat. #IT-07) IT injections; 10 μ l of 10- μ M Saporin (Cat. #PR-01) was used as a control. Lesioned animals displayed a reduction in response to all nicotinic agonists, but cardiovascular responses to IT nicotine were left intact. The results indicate subunit-specific interactions between the NK-1 receptor and nicotinic receptor systems.

Reactive oxygen species generation by the ethylene-bis-dithiocarbamate (EBDC) fungicide mancozeb and its contribution to neuronal toxicity in mesencephalic cells

Domico LM, Cooper KR, Bernard LP, Zeevalk GD

Neurotoxicology 28(6):1079-1091, 2007.

This work explores the mechanisms of neuronal damage associated with the ethylene-bis-dithiocarbamate fungicide mancozeb (MZ). In order to obtain a purified rat mesencephalic culture, the authors treated neuronal cultures with Mac-1-SAP (Cat. #IT-33) at a final concentration of 2 μ g/ml. The microglia-free cultures did not display attenuated reactive oxygen species (ROS) production when treated with MZ. The data suggest that microglia are not required for ROS production in the presence of MZ.

Brainstem catecholaminergic neurons modulate both respiratory and cardiovascular function

Li A, Emond L, Nattie E

Adv Exp Med Biol 605:371-376, 2008.

The authors examined the role of brainstem catecholamine (CA) neurons in various aspects of breathing and chemoreception. Rats received 5- μ g injections of anti-DBH-SAP (Cat. #IT-03) into the 4th ventricle; mouse IgG-SAP (Cat. #IT-18) was used as a control. This method of lesioning left the CA neurons in the peripheral nervous system intact. Lesioned animals displayed a constant decrease in breathing frequency, reduced response to CO₂, and increased variability of breathing during REM sleep. Inhibitory cardiovascular effects were also seen.

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