

Targeting Topics: Recent Scientific References

(continued from page 3)

conditions. The data suggest that SP receptor- and glutamate receptor-expressing neurons in the medullary raphe both influence CO₂ sensitivity, but not altered breathing periods.

Exogenous testosterone prevents motoneuron atrophy induced by contralateral motoneuron depletion.

Fargo KN, Sengelaub DR

J Neurobiol 60(3):348-359, 2004

Gonadal steroids have been shown to supply a variety of neuroprotective and neurotherapeutic effects. Using 1- μ l injections of 0.1% CTB-SAP (Cat. #IT-14) into the ipsilateral bulbocavernosus and the levator ani of rats, the authors examined the protective effects of testosterone on motoneuron morphology. After the lesion was induced some rats were castrated, and all animals were treated with exogenous testosterone. The results suggest that high-normal levels of testosterone can prevent motoneuron atrophy induced by contralateral motoneuron depletion.

Involvement of brainstem catecholaminergic inputs to the hypothalamic paraventricular nucleus in estrogen receptor alpha expression in this nucleus during different stress conditions in female rats.

Estacio MA, Tsukamura H, Reyes BA, Uenoyama Y, I'anson H, Maeda K

Endocrinology 145(11):4917-4926, 2004

Norepinephrine release in the paraventricular nucleus (PVN) is increased during periods of metabolic stress. The authors hypothesized that noradrenergic inputs to the PVN may also mediate estrogen receptor α (ER α) expression in the PVN during metabolic stress. 20 ng of Anti-DBH-SAP (Cat. #IT-03) was injected bilaterally into the PVN of rats, and ER α expression was examined in several stress models.

Results indicate that during metabolic stress catecholaminergic inputs to the PVN play a major role in mediating the induction of ER α expression.



Small reduction of neurokinin-1 receptor-expressing neurons in the pre-Bötzinger complex area induces abnormal breathing periods in awake goats.

Wenninger JM, Pan LG, Klum L, Leekley T, Bastastic J, Hodges MR, Feroah T, Davis S, Forster HV

J Appl Physiol 97(5):1620-1628, 2004

Previous work has shown that lesion of the pre-Bötzinger Complex (pre-Bötzc) of rats with SP-SAP (Cat. #IT-07) results in hypoventilation and an abnormal breathing pattern. The authors used 1 or 10 μ l of 50 pM SP-SAP bilaterally injected into the pre-Bötzc area to further investigate this system in goats. The results show transient changes in

respiratory rhythm and respiratory muscle activation patterns, indicating that SP receptor-expressing neurons in the pre-Bötzc are involved in the regulation of respiration.

Large lesions in the pre-Botzinger complex area eliminate eupneic respiratory rhythm in awake goats.

Wenninger JM, Pan LG, Klum L, Leekley T, Bastastic J, Hodges MR, Feroah TR, Davis S, Forster HV

J Appl Physiol 97(5):1629-1636, 2004

Previously the authors demonstrated that lesioning the pre-Bötzinger Complex (pre-Bötzc) with SP-SAP (Cat. #IT-07) resulted in transient disruptions of normal respiratory muscle activation in goats. The purpose of this study was to examine the effects of a more complete lesion of the pre-Bötzc area. The authors treated SP-SAP-lesioned goats with ibotenic acid. The results suggest that the pre-Bötzc is critical for generating a normal respiratory rhythm during the awake state.

Basomedial hypothalamic injections of neuropeptide Y-saporin (NPY-SAP) selectively disrupt hypothalamic controls of food intake.

Bugarith K, Dinh TT, Li AJ, Speth RC, Ritter S

Endocrinology [epub] Dec 16, 2004

The authors examined the effect of 48 ng injections of NPY-SAP (Cat. #IT-28) into the basomedial hypothalamus (BMH) on glucoprivic feeding in rats. While there was no evidence of retrograde transport, the lesions inhibited responses to intracerebroventricular leptin and ghrelin. Neither the feeding nor the hyperglycemic response to 2-deoxy-D-glucose was affected by the lesion, indicating that these hindbrain processes do not utilize neurons in the BMH. This work also describes dosing and injection parameter studies for the use of NPY-SAP.

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