

Targeting Trends

Reporting the latest news in Molecular Surgery



192 IgG-Saporin-Induced Lesions Identify an Inhibitory Role in Cocaine Reward for Cholinergic Neuronal Systems in the Diagonal Band and Ventral Pallidum

Contributed by Dr. James Smith, Wake Forest University School of Medicine, Department of Physiology and Pharmacology, Medical Center Blvd, Winston-Salem NC 27157

Inside this issue:

Targeting Topics	
<i>Scientific References</i>	3
Targeting Talk	
<i>Streptavidin-SAP</i>	5
Targeting Tools	
<i>Featured Products</i>	7
Targeting Teaser	
<i>Word Quiz</i>	8

Newsletter Highlights

- ◆ 10th Anniversary (page 2)
- ◆ San Marco Watercolor (page 2)
- ◆ Streptavidin vs. Avidin (page 5)
- ◆ mu p75-SAP, anti-Tac-SAP (page 7)

Denise Higgins, Editor



Recent data implicate cholinergic neurons in the brain processes that underlie reinforcement. The involvement of cholinergic neurons in cocaine self-administration has been recently demonstrated using muscarinic and nicotinic agonists and antagonists, microdialysis, assessment of choline acetyltransferase activity and acetylcholine (ACh) turnover rates. The ACh turnover rate study implicated specific cholinergic neuronal systems in cocaine self-administration. The present experiment was initiated to identify subsets of cholinergic neurons involved in the brain processes that underlie cocaine self-administration by lesioning discrete populations with a selective neurotoxin. Rats were trained to self-administer cocaine, and the immunotoxin 192 IgG-saporin or vehicle was

then bilaterally administered into the posterior nucleus accumbens (NAcc) - ventral pallidum (VP) forebrain regions (Figure 1). The effects of the lesion or sham treatment on cocaine self-administration were assessed followed by real time RT-PCR to evaluate the extent and specificity of the lesion by assessing p75 (the protein on the low affinity nerve growth factor receptor that is the target for 192 IgG-saporin) and choline acetyltransferase (ChAT) gene expression in four brain regions.

192 IgG-saporin-induced lesions of the posterior NAcc-VP-MS-DB (medium septum-diagonal band) region shifted the cocaine self-administration dose-intake relationship to the left compared to sham-treated controls. Real time RT-PCR showed significant reductions in

(continued on page 6)

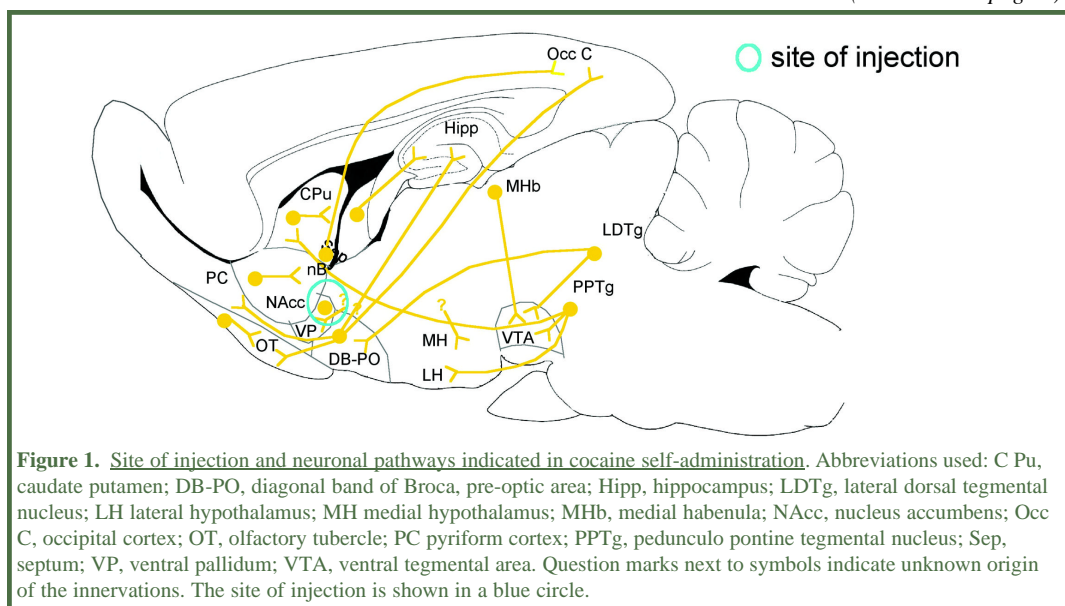


Figure 1. Site of injection and neuronal pathways indicated in cocaine self-administration. Abbreviations used: C Pu, caudate putamen; DB-PO, diagonal band of Broca, pre-optic area; Hipp, hippocampus; LDTg, lateral dorsal tegmental nucleus; LH lateral hypothalamus; MH medial hypothalamus; MHb, medial habenula; NAcc, nucleus accumbens; Occ C, occipital cortex; OT, olfactory tubercle; PC pyriform cortex; PPTg, pedunculo pontine tegmental nucleus; Sep, septum; VP, ventral pallidum; VTA, ventral tegmental area. Question marks next to symbols indicate unknown origin of the innervations. The site of injection is shown in a blue circle.