



## Alterations in $\gamma$ -aminobutyric acid<sub>B</sub> receptor binding in the rat brain after reinstatement of cocaine-seeking behavior

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### Abstract:

We examined neuroadaptive changes in GABA<sub>B</sub> receptor binding following reinstatement of cocaine-seeking behavior in rat brain structures using a “yoked” procedure and quantitative autoradiographic analysis. To estimate the distribution of GABA<sub>B</sub> receptors in several brain areas, we used [<sup>3</sup>H]CGP 54626, a GABA<sub>B</sub> receptor antagonist. The binding of [<sup>3</sup>H]CGP 54626 in the nucleus accumbens and the amygdaloid complex was decreased by about 20% in rats that actively administered cocaine. Similar decreases were seen in the animals that were passively administered cocaine; these rats also demonstrated decreased GABA<sub>B</sub> receptor binding in the prefrontal and frontal cortices, septum and dorsal striatum. The binding of [<sup>3</sup>H]CGP 54626 in several rat brain areas was decreased during 10-day withdrawal from self-administered cocaine. The cocaine-priming dose (10 mg/kg, *ip*) induced a significant increase of [<sup>3</sup>H]CGP 54626 binding in the core of the nucleus accumbens, substantia nigra (reticular part), prefrontal and frontal cortices and septum in rats withdrawn from cocaine self-administration. The presentation of the conditioned stimulus (tone + light) associated with previous cocaine self-administration induced a significant decrease of [<sup>3</sup>H]CGP 54626 binding in the mediodorsal thalamic nucleus and amygdaloid complex in the rats withdrawn from cocaine self-administration. Increases in GABA<sub>B</sub> receptor binding in limbic regions during cocaine-induced reinstatement likely reflect motivational states that were present during active drug self-administration.

### Key words:

cocaine-seeking behavior, GABA<sub>B</sub> receptors, quantitative autoradiography, yoked procedure

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