

4-Methylthioamphetamine Increases Dopamine in the Rat Striatum and has Rewarding Effects In Vivo

Sotomayor-Zárate, Ramón

Quiroz, Gabriel

Araya, Katherine A.

Abarca, Jorge

Ibáñez, María R.

Montecinos, Alejandro

Guajardo, Carlos

Núñez, Gabriel

Fierro, Angélica

Moya, Pablo R.

Iturriaga-Vásquez, Patricio

Gómez-Molina, Cristóbal

Gysling, Katia

Reyes-Parad

4-Methylthioamphetamine (MTA) is a phenylisopropylamine derivative whose use has been associated with severe intoxications. MTA is usually regarded as a selective serotonin-releasing agent. Nevertheless, previous data have suggested that its mechanism of action probably involves a catecholaminergic component. As little is known about dopaminergic effects of this drug, in this work the actions of MTA upon the dopamine (DA) transporter (DAT) were studied in vitro, in vivo and in silico. Also, the possible abuse liability of MTA was behaviourally assessed. MTA exhibited an in vitro affinity for the rat DAT in the low micromolar range ($6.01 \mu\text{M}$) and induced a significant, dose-dependent increase in striatal DA. MTA significantly increased c-Fos-positive cells in striatum and nucleus accumbens, induced conditioned place preference and increased locomotor activity. Docking experiments were performed in a homology model of the DAT. In conclusion, our results

show that MTA is able to increase e