Improving amphetamine therapeutic selectivity: N,N-dimethyl-MTA has dopaminergic effects and does not produce aortic contraction

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Amphetamine derivatives have therapeutic potential in diseases such as attention deficit hyperactivity disorder, narcolepsy and obesity. However, their prolonged use has been associated with cardiovascular toxicity and addiction. In recent years, we have studied the pharmacological effects of amphetamine derivatives such as methylthioamphetamine (MTA) and N,N-dimethyl-thioamphetamine, with the aim of improving their therapeutic selectivity. In this work, we show that similarly to MTA, N,N-dimethyl-thioamphetamine has effects on the dopamine system, producing a significant increase in extracellular levels of dopamine (as measured by in vivo brain microdialysis) and locomotor activity, which is a behavioural measure of dopaminergic activation. However, unlike MTA, N,N-dimethyl- thioamphetamine does not produce aortic contraction in vitro. Our results show that N,N-dimethyl-thioamphetamine is a drug that retains the dopaminergic effects of amphetamine derivatives but exhibits a lower potential for producing cardiovascular side effectss.