# Inhibitory effect of tetrabenazine, a VMAT2 inhibitor, on morphine-induced hyperlocomotion in mice without affecting expression levels of dopamine transporter

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A single administration with morphine induced a long-lasting hyperlocomotion in mice. Pretreatment of mice with tetrabenazine (TBZ; a reversible vesicular monoamine transporter-2 inhibitor) significantly attenuated the hyperlocomotion induced by morphine, as compared with vehicle-pretreated mice. No significant change in locomotion was observed in mice pretreated with TBZ alone. Mice treated with TBZ showed an increase in immobility time in a tail suspension test, as compared with saline-treated mice. Pretreatment with TBZ had no effect on morphine-induced alterations in expression levels of dopamine transporter in brain. TBZ inhibited dopamine turnover (the ratio of DOPAC/dopamine) and 5-HT turnover (the ratio of 5-HIAA/5-HT) in the cerebral cortex of mice challenged with morphine, as compared with saline-pretreated mice challenged with morphine. No stereotyped behavior was observed in mice treated with morphine in combination with TBZ, so that the reduction in observed locomotion did not result from induction of stereotypy. Moreover, TBZ pretreatment had no effect on stereotypy in methamphetamine-treated mice. These data support the potential antagonistic actions of TBZ on some opiate actions, and encourage further exploration of potential effects on morphine reinforcement.