

# Abstract

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## Behavioural phenotyping of sodium-myo-inositol cotransporter heterozygous knockout mice with reduced brain inositol.

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**BACKGROUND:** Inositol plays a key role in dopamine, serotonin, noradrenaline and acetylcholine neurotransmission, and inositol treatment is reported to have beneficial effects in depression and anxiety. Therefore, a reduction in brain intracellular inositol levels could be a cause of some psychiatric disorders, such as depression or anxiety.

**OBJECTIVE AND METHODS:** To determine the behavioural consequences of inositol depletion, we studied the behaviour of sodium-dependent myo-inositol cotransporter-1 heterozygous knockout mice.

**RESULTS:** In heterozygous mice, free inositol levels were reduced by 15% in the frontal cortex and by 25% in the hippocampus, but they did not differ from their wild-type littermates in cholinergic-mediated lithium-pilocarpine seizures, in the apomorphine-induced stereotypic climbing model of dopaminergic system function, in the Porsolt forced-swimming test model of depression, in amphetamine-induced hyperactivity, or in the elevated plus-maze model of anxiety.

**CONCLUSION:** Reduction of brain inositol by more than 25% may be required to elicit neurobehavioural effects.

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