

Further investigations on the effects of memantine injections on the Ts65Dn mouse model of Down syndrome.

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Recently, we have reported that acute injections of the uncompetitive NMDAR antagonist memantine rescue performance deficits of a major model for Down syndrome, the Ts65Dn mouse, on a fear conditioning test. Because the actions of memantine on NMDAR kinetics had been shown by others to mimic somewhat the actions of calcineurin, we attributed this positive effect of memantine on Ts65Dn mice to a drug-mediated ‘normalization’ of NMDAR function (Costa et al., Neuropsychopharmacology, 2007).

Currently, we are expanding these investigations onto two new directions:

- 1) given memantine’s status as an FDA approved drug, we are starting a pilot clinical trial to investigate the potential cognitive effects of memantine in young adults with Down syndrome as a follow-up study to our preclinical research; and
- 2) we are investigating the molecular/cellular mechanisms underlying the memory/learning enhancing actions of memantine on Ts65Dn mice.

Here, we will revisit some of our behavioral findings and present some additional data on electrophysiological phenotypes in the Ts65Dn mice that are compatible with a reduction in calcineurin activity in these animals. In addition, we will present preliminary results on our attempts of using memantine to reverse these electrophysiological phenotypes in Ts65Dn mice.

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