

**$\alpha$ -Tocopherol administration produces an antidepressant-like effect in predictive animal models of depression.** K. R. Lobato, C. C. Cardoso, R. W. Binfare, J. Budni, C. L.R. Wagner, P. S. Brocardo, L. F. de Souza, C. Brocardo, S. Flesch, A. E. Freitas, A. L. Dafre, A. L. S. Rodrigues, *Behav. Brain Res.*, **209**, 249-259 (2010).

This study investigated the antidepressant potential of  $\alpha$ -tocopherol, the most active and abundant form of vitamin E, in the forced swim test (FST) and tail suspension test (TST). The acute oral treatment with  $\alpha$ -tocopherol ( $\alpha$ -T) at the doses of 30 and 100 mg/kg reduced the immobility time in the FST and in the TST. A single i.c.v. administration of  $\alpha$ -tocopheryl phosphate, a water-soluble analogue of  $\alpha$ -tocopherol, also reduced the immobility time in the FST (0.1 and 1 nmol/site) and in the TST (0.1 nmol/site). In addition, the long-term treatment (28 days) with  $\alpha$ -tocopherol (10 mg/kg, p.o.) significantly reduced the immobility time in the FST. Moreover, a subeffective dose of  $\alpha$ -T (10 mg/kg, p.o.) potentiated the effect of fluoxetine (10 mg/kg, p.o.) in the FST. The long-term treatment with  $\alpha$ -T was able to increase the glutathione (GSH) antioxidant defense system, while the acute treatment was not. The long-term treatment with  $\alpha$ -tocopherol (10 mg/kg) increased the GSH levels in the hippocampus and in the prefrontal cortex and increased the glutathione peroxidase and glutathione reductase activity in the hippocampus (10 mg/kg) and in the prefrontal cortex (10–100 mg/kg). The long-term treatment with fluoxetine (10 mg/kg, p.o.), a positive control, was also able to increase the GSH levels in the hippocampus, but failed to alter the activity of both enzymes. Besides the specific antidepressant-like effect, long-term, but not the acute treatment with  $\alpha$ -T, especially in the doses that produced an antidepressant-like effect (10 mg/kg), improved the antioxidant defenses in the mouse hippocampus and prefrontal cortex, two structures closely implicated in the pathophysiology of depression.