Pharmacological Reports
2011, 63, 64–70
ISSN 1734-1140

Magnesium sulfate and sodium valproate block methylphenidate-induced hyperlocomotion, an animal model of mania

Francisco J. Barbosa[1,2], Bernardete Hesse[1], Rodrigo B. de Almeida[1], Irinéia P. Baretta[1,3], Roseli Boerngen-Lacerda[1], Roberto Andreatini[1]

[1]Department of Pharmacology, Division of Biological Sciences, Universidade Federal do Paraná, Centro Politécnico C.P. 19031, Curitiba, PR, 81540-990 Brazil

[2]Department of Forensic Medicine and Psychiatry, Division of Health Sciences, Universidade Federal do Paraná, Curitiba, PR, 80060-240 Brazil

[3]Department of Pharmacology, Institute of Biological, Medical and Health Sciences, Universidade Paranaense, Umuarama, PR, 87502-210 Brazil

Correspondence: Roberto Andreatini, e-mail: randreatini@ufpr.br

Abstract:
Magnesium sulfate ($MgSO_4$) is used to treat and prevent eclamptic seizures, and several anticonvulsant drugs (e.g., sodium valproate) are clinically effective antimanic drugs. Psychostimulant-induced hyperlocomotion has been proposed as an animal model for the study of antimanic drugs. The present study evaluated the effects of $MgSO_4$ and sodium valproate (as a positive control) on hyperlocomotion induced by methylphenidate in mice. Acute $MgSO_4$ (300–400 mg/kg), but not sodium valproate (100–300 mg/kg), prevented the increase in locomotor activity induced by methylphenidate (5.0 mg/kg). In contrast, repeated treatment (14 days) with valproate (300 mg/kg), but not $MgSO_4$ (400 mg/kg), blocked methylphenidate-induced hyperlocomotion. Thus, acute $MgSO_4$ exerted antimanic-like effects in this animal model.

Key words:
anticonvulsant, locomotor activity, mania, psychostimulant, magnesium sulfate, valproate