

Natureza do trabalho: Relato de caso

TÍTULO

INTRAHIPPOCAMPAL SPERMIDINE ADMINISTRATION IMPROVES PERSISTENCE OF LONG-TERM MEMORY

CRISTIANE SIGNOR, GERUSA PAZ PORTO, BRUNA AMANDA GIRARDI, MICHELE MULLER, MAYARA GAIS, MARIBEL ANTONELLO RUBIN

UNIVERSIDADE FEDERAL DE SANTA MARIA, UFSM, SANTA MARIA, RS, BRASIL

RESUMO

INTRODUCTION: For persistence of long-term memory (LTM), a new event of consolidation is necessary, 12 hours after the acquisition. Spermidine is an endogenous polyamine that activates the N-methyl-D-aspartate receptor (NMDAr) function and facilitates memory. There is no studies investigating the role of spermidine in the persistence of LTM. **OBJECTIVES:** In the current study we investigated whether intrahippocampal administration of spermidine and arcaïne, antagonist of polyamines binding site of N-methyl-D-aspartate receptor (NMDAr), alter the persistence of the memory of contextual fear-conditioning task in rats. **MATERIAL AND METHODS:** Each animal was subjected to a single fear-conditioning training session, as described by Rubin et al (2004), with some modifications. In brief, the rat was placed in the conditioning chamber and habituated to the apparatus for 3 min. Immediately after habituation, three 1 s, 0.4 mA footshocks were delivered. 12 hours post-training the animals received, an intrahippocampal injection of vehicle (saline), spermidine (0.02-2 nmol/sítio), arcaïne (0.02-2 nmol/sítio) or arcaïne (0.2 nmol/sítio) plus spermidine (2 nmol/sítio) and 2 or 7 days after training, each rat was placed back in the conditioning chamber and test session was performed. During test, no shock was given, and the freezing was assessed. **RESULTS:** Spermidine (2 nmol/side) increased the contextual freezing of animals tested 7 days after training, but not 2 days after training, following the literature reports (Bekinschtein et al., 2007; Bekinschtein et al., 2008; Bekinschtein et al., 2010; Parfitt et al., 2012; Rossato et al., 2009). Arcaïne (2 nmol/side) promoted the opposite effect. Arcaïne, (0.2 nmol/side), prevented the increase of contextual freezing induced by spermidine. **DISCUSSION:** The improvement of memory persistence induced by spermidine is in accordance with the similar effect induced by compounds that increase NMDAr transmission (Rossato et al., 2009). **CONCLUSION:** These results suggest that endogenous polyamines Improves persistence of long-term memory storage.