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[home](#) [page](#) [about us](#) [contact](#)

[us](#)

Table of
Contents

**VETMED
2015**

**VETMED
2014**

**VETMED
2013**

**VETMED
2012**

**VETMED
2011**

**VETMED
2010**

**VETMED
2009**

**VETMED
2008
VETMED
2007
VETMED
2006
VETMED
2005
VETMED
2004
VETMED
2003
VETMED
2002
VETMED
2001
VETMED
Home**

**Editorial
Board**

For Authors

- **Authors
Declaration**
- **Instruction
to Authors**
- **Guide for**

Authors

▪ **Fees**

▪ **Submission**

Subscription

Veterinarni Medicina

The effect of felbamate on behavioural sensitization to methamphetamine in mice

Landa L, Slais K, Sulcova A:

Veterinarni Medicina, 57 (2012): 364-370

[[fulltext](#)]

It has been shown that methamphetamine (Met) similar to other psychostimulants induces a progressive augmentation of behavioural responses after repeated administration, so called behavioural sensitisation. Numerous studies refer to an important role for *N*-methyl-d-aspartate (NMDA) receptors in the development of behavioural sensitisation. Activating antiepileptic drugs of the newer second generation, such as felbamate (Fel), also invoke psychotropic effects. They may possess attention-enhancing and antidepressant activity, causing anxiety, insomnia, and agitation. Although not all pharmacological effects of felbamate are fully elucidated yet, many of its clinical

effects may be related to the inhibition of NMDA currents. Thus, the present study was focused on investigating the influence of felbamate on sensitisation to the effects of methamphetamine on mouse locomotor behaviour in the Open field test. Mice of the albino out-bred strain ICR were randomly allocated into four groups and were administered drugs seven times (from the 7th to 13th day of the experiment) as follows: (a) $n_{1, 2}$: 2.5 mg/kg/day of Met; (b) n_3 : 240 mg/kg/day of Fel; (c) n_4 : Met + Fel. Locomotion in the Open field test was measured (a) after administration of vehicle on the 1st experimental day, (b) after the first dose of drugs given on the 7th day, and (c) on the 14th day after the “challenge doses” given that way (as follows): n_1 : Met; n_2 : Met + Fel, n_3 : Fel; n_4 : Met. The following significant behavioural changes were observed: (1) stimulatory influence of Met and sensitisation after repeated treatment (n_1); (2) inhibition of Met sensitisation in the case of a challenge dose combined with Fel (n_2); (3) augmentation of the

sensitising effect of Met which sensitisation was induced by pre-treatment with Met + Fel (n_4); (4) no behavioural effect of the first dose of Fel, but inhibition of locomotion after repeated administration of the drug (n_3). The prevention of the development of Met sensitization in the group n_2 in which mice received the Met challenge dose with Fel mirrors the results of a majority of similar studies. Most findings are consistent with inhibitory effects of antagonists of the NMDA receptors on the development of sensitisation to amphetamines; nevertheless, also new findings are reported. In the presented paper, combined pre-treatment with Met + Fel in the group n_4 facilitated the development of sensitisation to Met stimulatory effects.

Keywords:

behavioural sensitisation;
methamphetamine; felbamate; NMDA
receptor antagonist; mice

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