ANXIOLYTIC-LIKE EFFECT OF BETA RECEPTOR AGONIST AMIBEGRON (SR 58611A) WHICH MAY BE RELATED TO INTERACTION OF SEROTONIN RECEPTOR SUBTYPES

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OBJECTIVES

Anxiety disorders are the most common and prevalent behavioral disorders with high comorbidity rates. The decrease of the serotonergic activity and dysregulation of catecholaminergic system may play a role in the pathogenesis of anxiety.

THE AIM OF THE STUDY

This study is aimed to investigate the effects of the first selective beta3 adrenergic agent amibegron on anxiety and also the involvement of different serotonin receptor subtypes in this effect.

MATERIAL-METHODS

We used the serotonin 5HT1A receptor antagonist WAY-100635, serotonin 5HT2A-2C receptor antagonist ketanserin and serotonin 5HT3 receptor antagonist ondansetron in the elevated plus maze test.

RESULTS

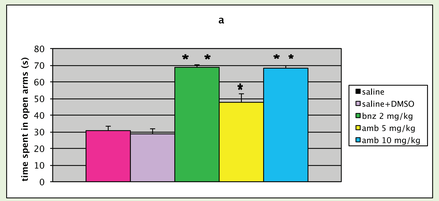
Amibegron (5 and 10 mg/kg) dose dependently prolonged the time spent in open arms and the number of entries to the open arms in mice EPM test. WAY, ketanserin and ondansetron had no effect on the time spent in open arms and the number of entries to the open arms in mice and also they all significantly reversed amibegron (10 mg/kg)-induced increase in the time spent in open arms while only WAY and ketanserin reversed amibegron-induced increase in number of entries to the open arms. The influence of the treatments on locomotor activity was evaluated by one-way ANOVA. None of the administered treatments modified the total distance moved or the speed of the animals

CONCLUSION

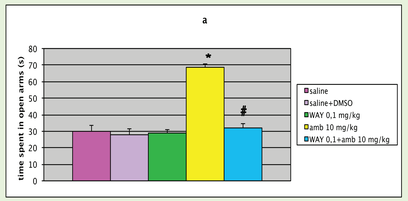
In conclusion, amibegron exerted significant anxiolytic-like effects in the mice EPM test which was as effective as diazepam. This effect of amibegron may be mediated by an interaction with serotonin 5-HT1A, 5-HT2A-2C and 5-HT3 receptors.

DISCLOSURE PANELS

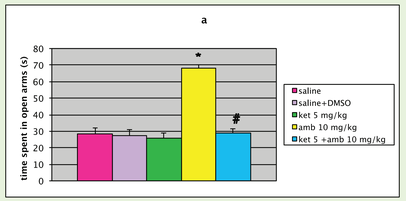
Nothing to disclose



Effects of diazepam (bnz) (2 mg/kg) and amibegron (amb) (5 and 10 mg/kg) on the % time spent in open arms in mice EPM test. Each column represents the mean ± S.E.M.of 9-10 animals. *p<0.01; ** p<0.001 compared to vehicle control (Tukey test)



Effects of amibegron (amb) (10 mg/kg), WAY-100635 (WAY) (0,1 mg/kg) and combination of amibegron and WAY-100635 on the % time spent in open arms in mice EPM test. Each column represents the mean±S.E.M. of 9-10 animals.
* p<0.001 compared to vehicle control (Tukey test); # p<0.001 compared to amibegron 10 mg/kg (Tukey test)



Effects of amibegron (amb) (10 mg/kg), ketanserin (ket) (5 mg/kg) and combination of amibegron and ketanserin on the % time spent in open arms in mice EPM test. Each column represents the mean±S.E.M. of 9-10 animals.
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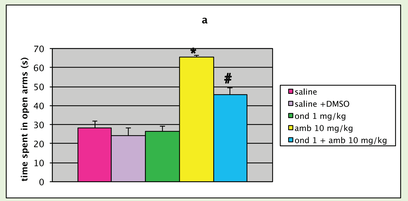

Effects of amibegron (amb) (10 mg/kg), ondansetron (ond) (1 mg/kg) and combination of amibegron and ondansetron on the % time spent in open arms in mice EPM test. Each column represents the mean±S.E.M. of 9-10 animals.
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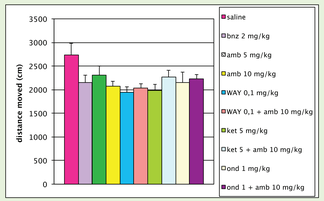
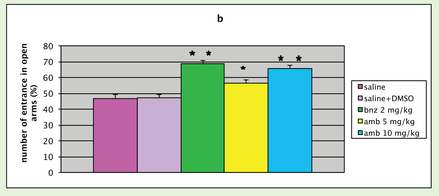
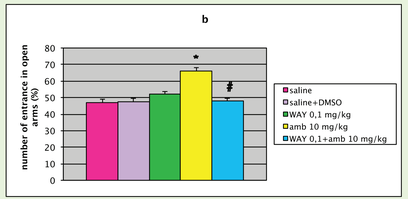


Effects of diazepam (2 mg/kg), amibegron (5 and 10 mg/kg), WAY-100635 (0,1 mg/kg), WAY-100635 (0,1 mg/kg) + amibegron (10 mg/kg), ketanserin (5 mg/kg), ketanserin (5mg/kg) + amibegron (10 mg/kg), ondansetron (1 mg/kg), ondansetron (1 mg/kg) + amibegron(10 mg/kg) on total distance moved in the open field test. Each column represents themean±S.E.M.of 8 animals.
p>0.05 compared to vehicle control (Tukey test)



Effects of diazepam (2 mg/kg) and amibegron (5 and 10 mg/kg) on the % number of entries to the open arms in mice EPM test. Each column represents the mean ± S.E.M.of 9-10 animals.
*p<0.05; ** p<0.001 compared to vehicle control (Tukey test)



Effects of amibegron (10 mg/kg), WAY-100635 (0,1 mg/kg) and combination of amibegron and WAY-100635 on the % number of entries to the open arms in mice EPM test. Each column represents the mean±S.E.M. of 9-10 animals.
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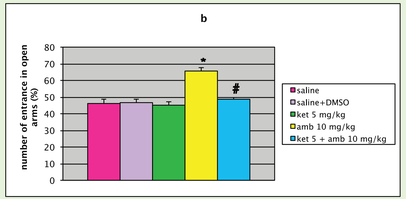

Effects of amibegron (10 mg/kg), ketanserin (5 mg/kg) and combination of amibegron and ketanserin on the % number of entries to the open arms in mice EPM test. Each column represents the mean±S.E.M. of 9-10 animals.
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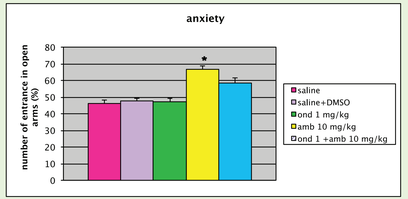

Effects of amibegron (10 mg/kg), ondansetron (1 mg/kg) and combination of amibegron and ondansetron on the % number of entries to the open arms in mice EPM test. Each column represents the mean±S.E.M. of 9-10 animals.
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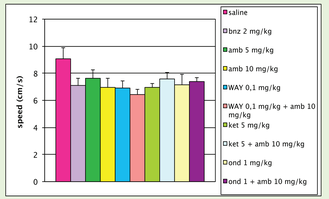

Effects of diazepam (2 mg/kg), amibegron (5 and 10 mg/kg), WAY-100635 (0,1 mg/kg), WAY-100635 (0,1 mg/kg) + amibegron (10 mg/kg), ketanserin (5 mg/kg), ketanserin (5mg/kg) + amibegron (10 mg/kg), ondansetron (1 mg/kg), ondansetron (1 mg/kg) + amibegron (10 mg/kg) on speed of the animals in the open field test. Each column represents the mean±S.E.M.of 8 animals.
p>0.05 compared to vehicle control (Tukey test)