



ASENAPINE AND PALIPERIDON EXERT ANTIDEPRESSANT- AND ANXIOLYTIC-LIKE EFFECTS IN MICE

O. Mutlu¹, G. Ulak¹, I. Celikyurt¹, F. Akar¹, E. Bektas¹, P. Tanyeri²

¹ Kocaeli University Medical school, Pharmacology, Turkey

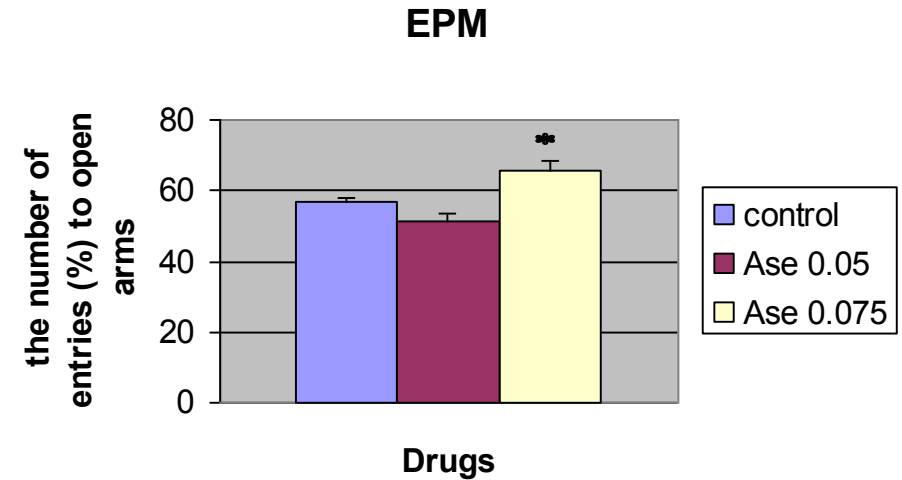
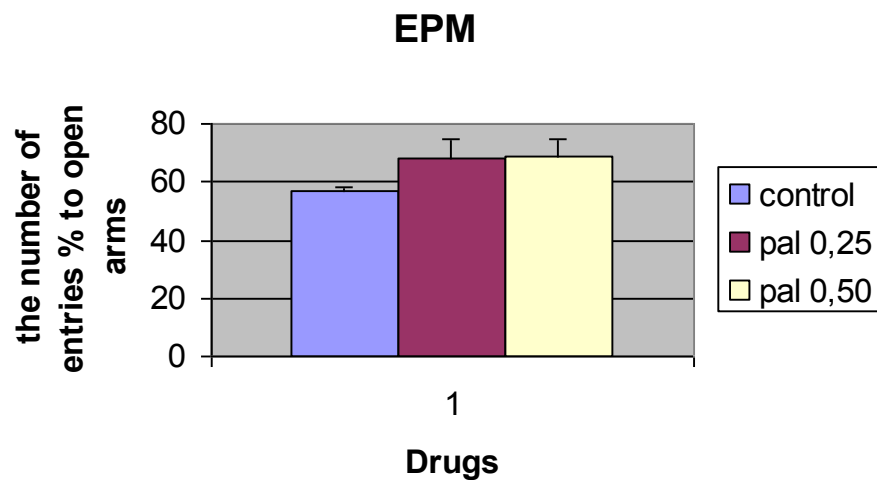
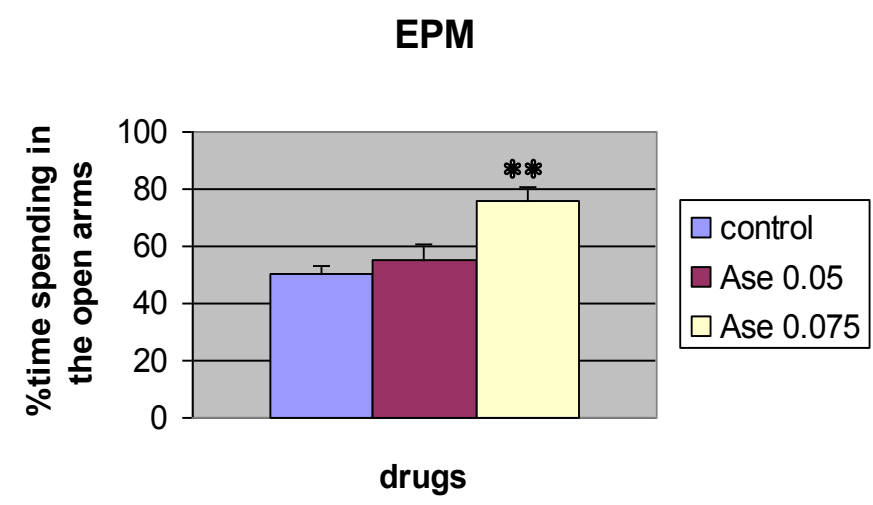
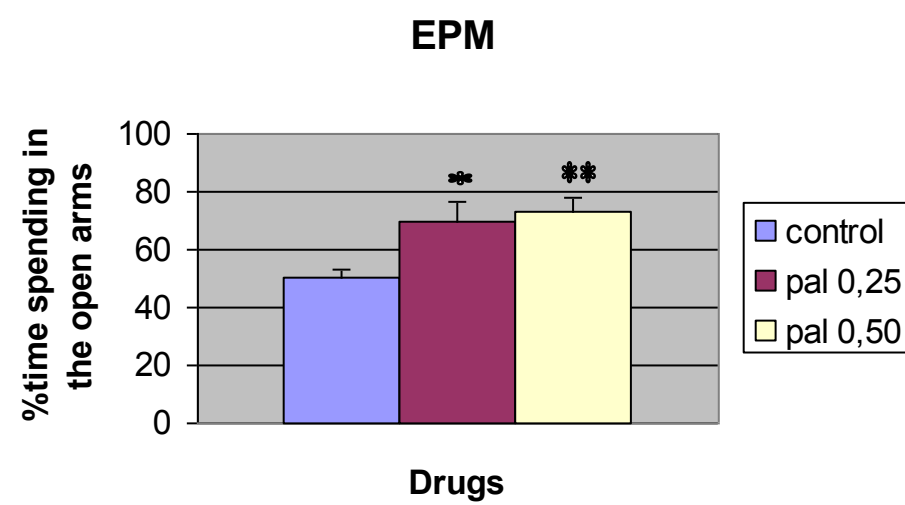
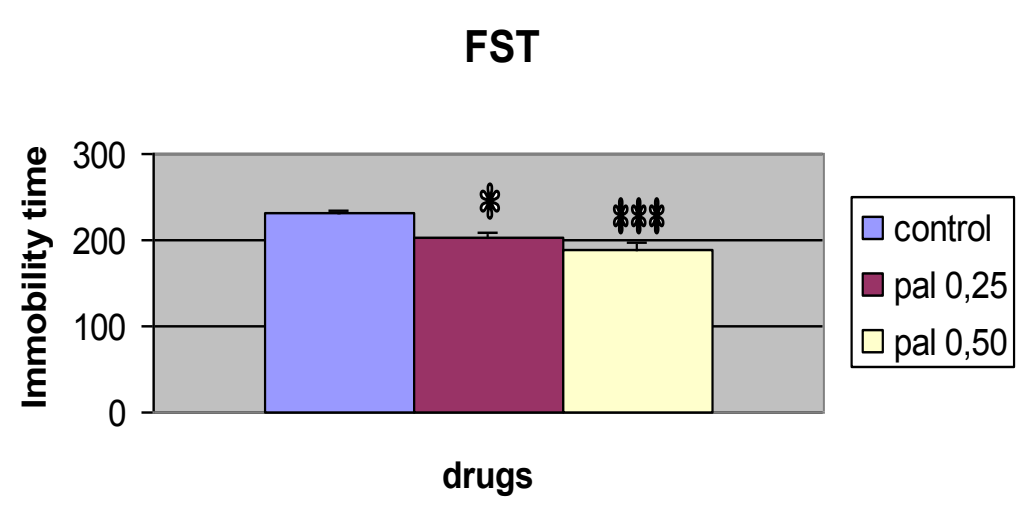
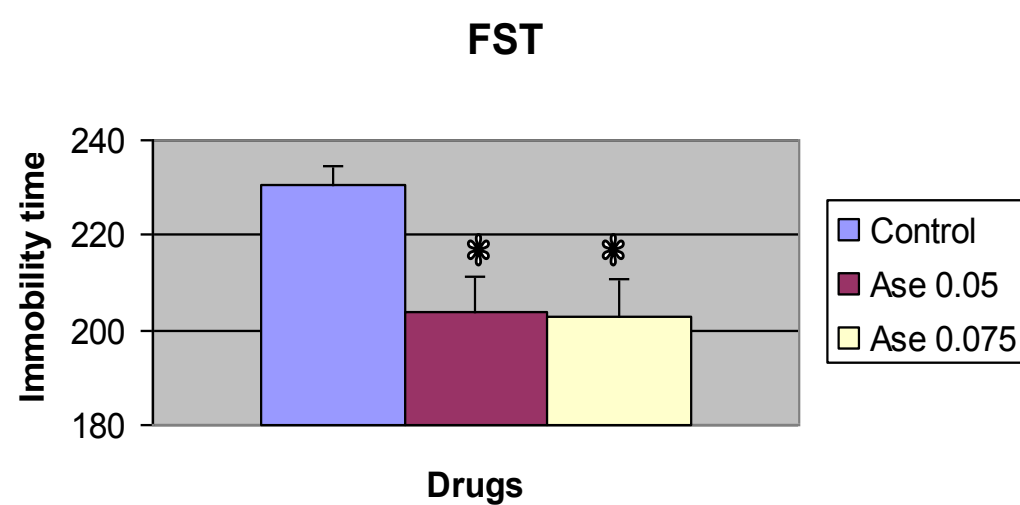
² Sakarya University Medical school, Pharmacology, Turkey

Objectives:

Schizophrenia is a severe illness seen in 1% of community and it is related with neurodevelopment. Classical antipsychotic drugs improve mostly positive symptoms of schizophrenia like hallucinations and exert many side effects like extrapyramidal symptoms. New generation antipsychotics are developed to have lesser side effects and also act on negative symptoms of schizophrenia like mood disorders and cognition. Asenapine and paliperidone are new generation antipsychotic drugs proposed to exert antidepressant- and anxiolytic-like effects.

Methods:

The aim of this study was to investigate the antidepressant- and anxiolytic-like effects of asenapine and paliperidone in the forced swimming (FST) and elevated plus maze (EPM) tests, common and well-known tests to evaluate depression and anxiety. In the FST test, the mice were dropped individually into cylinders containing 10 cm of water maintained at 23-25° C and left there for 6 min. Because this is a situation from which they cannot escape, the animals rapidly become immobile, that is, floating in an upright position and making only small movements to keep their heads above water. The duration of immobility was recorded during the last 4 min of the 6-min testing period. In the EPM test, each mouse was placed at the center of the maze, facing one of the open arms, and was allowed to explore the maze. During a 5-min test period, the number of entries into either open or enclosed arms of the maze (defined as the entry of all four limbs into arms) and the time spent on open arms was recorded. If values for both of the measured parameters were changed in the same direction compared to control values and the change in one of the parameters was statistically significant, then an effect on anxiety was considered to have occurred. Male balb-c mice were treated subchronically with asenapine (0.05 and 0.075 mg/kg) and paliperidone (0.25 and 0.50 mg/kg) (n=9-10). Asenapine and paliperidone were administered intraperitoneally and subchronically for 10 days and on the 11th day drugs were given 30 and 60 min. before FST and EPM tests, respectively. One way Anova post hoc Tukey's test was used as a statistical analysis method.



Results:

In the FST test, both asenapine (0.05 and 0.075 mg/kg; $p<0.05$) and paliperidone (0.25 and 0.50 mg/kg; $p<0.01$, $p<0.001$ respectively) significantly diminished immobility time (%) compared to control.

In the EPM test asenapine (0.075 mg/kg, $p<0.01$) and paliperidone (0.25 and 0.50 mg/kg; $p<0.05$, $p<0.01$ respectively) significantly increased the time spent (%) in the open arms.

Asenapine 0.075 mg/kg ($p<0.05$) and paliperidone also increased the total number of entries (%) to open arms although paliperidone failed to reach to a statistically significant value.

Conclusion:

Results of our study reveal that both asenapine and paliperidone exert antidepressant- and anxiolytic-like effects in the FST and EPM tests. So, asenapine and paliperidone might be preferred to other antipsychotics and could improve the negative symptoms of schizophrenia and psychosis. Further studies with different models of depression and anxiety should be performed to support our results.

There is no conflict of interest

Asenapine and paliperidone exert antidepressant- and anxiolytic-like effects in mice

O. Mutlu¹, G. Ulak¹, I. Celikyurt¹, F. Akar¹, E. Bektas¹, P. Tanyeri²

¹*Kocaeli University Medical school, Pharmacology, zmit-Kocaeli, Turkey*

²*Sakarya University Medical school, Pharmacology, Sakarya, Turkey*

Schizophrenia is a severe illness seen in 1% of community and it is related with neurodevelopment. Classical antipsychotic drugs improve mostly positive symptoms of schizophrenia like hallucinations and exert many side effects like extrapyramidal symptoms. New generation antipsychotics are developed to have lesser side effects and also act on negative symptoms of schizophrenia like mood disorders and cognition. Asenapine and paliperidone are new generation antipsychotic drugs proposed to exert antidepressant- and anxiolytic-like effects.

The aim of this study was to investigate the antidepressant- and anxiolytic-like effects of asenapine and paliperidone in the forced swimming (FST) and elevated plus maze (EPM) tests, common and well-known tests to evaluate depression and anxiety. In the FST test, the mice were dropped individually into cylinders containing 10cm of water maintained at 23–25°C and left there for 6min. Because this is a situation from which they cannot escape, the animals rapidly become immobile, that is, floating in an upright position and making only small movements to keep their heads above water. The duration of immobility was recorded during the last 4min of the 6-min testing period. In the EPM test, each mice was placed at the center of the maze, facing one of the open arms, and was allowed to explore the maze. During a 5-min test period, the number of entries into either open or enclosed arms of the maze (defined as the entry of all four limbs into arms) and the time spent on open arms was recorded. If values for both of the measured parameters were changed in the same direction compared to control values and the change in one of the parameters was statistically significant, then an effect on anxiety was considered to have occurred. Male balb-c mice were treated subchronically with asenapine (0.05 and 0.075mg/kg) and paliperidone (0.25 and 0.50mg/kg) (n=9–10). Asenapine and paliperidone were administered intraperitoneally and subchronically for 10 days and on the 11th day drugs were given 30 and 60min. before FST and EPM tests, respectively. One way Anova post hoc Tukey's test was used as a statistical analysis method.

In the FST test, both asenapine (0.05 and 0.075mg/kg; $p<0.05$) and paliperidone (0.25 and 0.50mg/kg; $p<0.01$, $p<0.001$ respectively) significantly diminished immobility time (%) compared to control.

In the EPM test asenapine (0.075mg/kg, $p<0.01$) and paliperidone (0.25 and 0.50mg/kg; $p<0.05$, $p<0.01$ respectively) significantly increased the time spent (%) in the open arms. Asenapine 0.075mg/kg ($p<0.05$) and paliperidone also increased the total number of entries (%) to open arms although paliperidone failed to reach to a statistically significant value.

Results of our study reveal that both asenapine and paliperidone exert antidepressant- and anxiolytic-like effects in the FST and EPM tests. So, asenapine and paliperidone might be preferred to other antipsychotics and could improve the negative symptoms of schizophrenia and psychosis. Further studies with different models of depression and anxiety should be performed to support our results.

Citation: Eur Neuropsychopharmacol. 2014;24(Suppl 2):S271

Keywords

Behavioural pharmacology

Neuroleptics & antipsychotics: basic

Neuropharmacology