Evaluation of Anti-Anxiety and Anti-Depressant Effect of Palonosetron in Swiss Albino Mice

Jyoti Sharma
Department of Pharmacology, PGIMS Rohtak

Abstract

Background

Depression and anxiety remain serious problems in given unexpected circumstances like Covid-19. Serotonin is one of the most important neurotransmitters influencing mental health and a potential target for pharmacological treatments. $5HT_3$ receptor antagonists like ondansetron; mainly used for management of acute & delayed cancer chemotherapy induced emesis, has shown anxiolytic and antidepressant effect in various studies. Another $5HT_3$ antagonist; Palonosetron approved for delayed cancer chemotherapy induced emesis, has yet not been studied for anxiolytic and antidepressant effects.

Materials & Methods

Light-dark compartment model was used for anti-anxiety effect evaluation and Swim despair test was used for evaluation of anti-depressant effect. Swiss albino mice were used and randomly divided in 5 groups of 6 each to receive following 5 treatments: Group 1Control i.e normal saline (0.1 ml/10 g of body weight i.p.), Group 2: Diazepam (1mg/kg i.p), Group 3: Fluoxetine (18mg/kg i.p), Group 4: Palonosetron (0.025 mg/kg i.p), Group 5: Palonosetron (0.05mg/kg i.p) in each animal model. In light-dark compartment model efficacy was assessed at end of 15, 30, 60, 120, 180 & 300mins by observing time spent in light compartment and number of transitions made between both compartments. In Swim despair test efficacy was assessed by recording of immobility period after 1 hr & 24 hrs of drug administration.

Results

Time spent in the light compartment at the end of 30, 60 and 120 min with palonosetron (0.05mg/kg) was statistically significant more as compared to control & fluoxetine. No of transitions made between both compartments also increased with palonosetron (0.05mg/kg) at the end of 15, 30, 60 & 120 mins as compared to control and fluoxetine groups. In Swim despair test palonosetron (0.05mg/kg) showed statistically significant antidepressant activity as compared to control and fluoxetine group at 1 hr & 24 hrs respectively.

Conclusion

Palonosetron (0.05mg/Kg) possesses significant antidepressant & anti-anxiety activity in animal models.