Effect of Ranolazine and Dronedarone on Isoproterenol induced cardiac dysfunction in rats

Thesis

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ABSTRACT

The present study demonstrates the effect of ranolazine (an inhibitor of the late sodium current) and dronedarone (a potassium channel blocker) on cardiovascular dysfunction in isoproterenol induced cardiotoxicity in rats.

Ranolazine (20 mg/kg), dronedarone (30mg/kg) were administered orally once daily for 14 days and isoproterenol (85mg/kg)was injected subcutaneously once on the day 13 and 14 to study their effects on electrocardiogram changes(heart rate, QT and QTc intervals) ,oxidative stress parameters (serum malondialdehide and serum super oxide dismutase) and histopathological analysis of cardiac tissue.

The results of the present study showed that dronedarone significantly decreased heart rate by 17%, QT interval by 10% and QTc interval by 15 % after isoproterenol injection. On the other hand there was no significant difference regarding heart rate, QT and QTc intervals in ranolazine group compared to isoproterenol.

Ranolazine and dronedarone significantly decreased serum malondialdehide by 38% and significantly increased serum superoxide dismutase by 60% after isoproterenol injection .The histopathological examination by the light microscopy using Hematoxylin and Eosin revealed that ranolazine and dronedarone decreased cardiac inflammation and vacuolation to the same extent.

The results of the present work implicate that short term treatment with ranolazine and dronedarone may produce a therapeutic potential for treating isoproterenol induced cardiovascular dysfunction.

Key Words: Cardiotoxicity, Isoproterenol, Ranolazine, Dronedarone