The effect of essence of Citrus aurantium on the electrophysiological properties of isolated perfused rabbit AV-node

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Abstract

Background&Objective: Pharmacological studies and traditional medical literature point to the cardiovascular effects of the Citrus aurantium L. (Rutaceae) in many instances. In the present study, we used isolated perfused AV-node of rabbit as an experimental model to determine the effect of various concentrations of essence of Citrus aurantium (0.1-0.3 v/v) on electrophysiological properties of isolated heart. The second goal of the present study was to assess the protective role of essence of Citrus aurantium on arrhythmogenic effects of ouabain.

Materials&Methods: This was a semi-experimental study. We used isolated perfused rabbit AV-nodal preparation, in three groups. In the first group, the effect of various concentration of the Citrus aurantium (0.1, 0.2, 0.3 ml/l) was assesed on the AV-node. In the second and third groups, the effect of Citrus aurantium was tested in the presence of ouabain (0.1μmolar) and verapamil (0.1μmolar). We used 6 rabbit in each group. Statistical analysis was preformed by SPSS Mean±SE was used in the all results.

Results: Our results showed depressant effects of extract of Citrus aurantium on Wenchebach Cycle Length (WBCL), AV Conduction Time (AVCT), Effective and Functional Refractory Periods (ERP & FRP).Rate-dependent properties such as Facilitation and fatigue significantly increased by Citrus.a (0.3ml/l). We had significant increase in the AVCT (32.6±3.6 to 40±6.08 msec) and FRP (147±5.1 to 166.6±3.6 msec) by Citrus.a. We had a protective role of Citrus aurantium on ouabain induced AV-nodal depression. The magnitude of facilitation and fatigue in the concentration of 0.3 C.aurantium was 7.5±0.3 and 6.5±0.5, respectivly.

Conclusion: The above results indicated potential inhibitory and antiarrhythmic effect of Citrus aurantium in treating supraventricular tachyarrhythmia.

Key Words: Citrus aurantium- Isolated AV-node- Arrhythmia- Herbal drugs