

## Abstract

Charles University in Prague, Faculty of Pharmacy in Hradec Králové  
Department of Biological and Medical Sciences

Candidate: Jana Koulová

Supervisor: Doc. RNDr. Vladimír Semecký, CSc.

Title of thesis: Influence of selected substances with cardioprotective potential on isoprenaline induced myocardial damage in a rat model.

Cardiovascular diseases are one of the major cause of mortality. To clarify the pathogenesis of acute myocardial infarction (AMI) and to research cardioprotective substances, an isoprenaline (ISO) model of rat myocardial damage is used. This study assessed the cardioprotective potential of intravenously administered rutin in a single dose 11.5 mg / kg in the rat myocardium, which was later given a single subcutaneous dose of ISO (100 mg / kg). The aim of the experiment was to study the functional, biochemical and histological changes occurring in the rat myocardium after 2 hours from application of ISO and rutin with ISO. Observed changes were compared among themselves and also compared to the control group, which was applied intravenously with solvent NaHCO<sub>3</sub> in a single dose of 4.6 ml / kg.

Functional parameters as heart rate and blood pressure after 2 hours from the application were consistent with the expected development presented in studies with ISO that have been made previously. That means an increase in heart rate and reduction of blood pressure were observed. A similar development occurred in the group of rats who received rutin with ISO. However the comparison of these two groups was not statistically significant. Biochemical analysis revealed similarly elevated levels of troponin T at both of these groups with statistical significance compared to the control group, but markers of oxidative stress (vitamin E and vitamin C) have not experienced significant changes neither after administration of ISO nor after administration of rutin with ISO. The results were supplemented by histological analysis in which no differences between the structure of the myocardium after exposure of ISO and rutin with ISO were found.