

EFFECTS OF QUERCETIN ON SELECTED CARDIOVASCULAR PARAMETERS AND ISCHEMIA-REPERFUSION INJURY OF THE MYOCARDIUM IN AGED RATS

Ferenczyova K¹, Kindernay L¹, Kalocayova B¹, Strapec J¹, Barancik M¹, Bartekova M¹

¹*Institute for Heart Research, Centre of Experimental Medicine, Slovak Academy of Sciences, Bratislava, Slovakia*

Quercetin (QCT) is a polyphenolic compound that has been studied for its cardioprotective potential. In previous studies QCT exerted cardioprotective effects on ischemia-reperfusion (I/R) injury in healthy young animals without associated comorbidities. The aim of the current study was to reveal potential beneficial cardioprotective effect of QCT on aged rats.

QCT (20 mg/kg/day, 6 weeks) was administered 24-months old Wistar rats. Blood pressure was measured by tail-cuff pletysmography before the start and at the end of QCT administration. Isolated perfused hearts were exposed to global I/R (30/120min) followed by evaluation of infarct size using TTC staining method. Molecular mechanisms of QCT effects in the heart were analyzed in left ventricles by Western Blot monitoring protein expression of RISK (Reperfusion Injury Salvage Kinases) signaling pathway and markers of apoptosis (Bax/Bcl-2) and antioxidative enzymes (SOD1, SOD2).

Our results showed, that QCT had no effect neither on biometric and biochemical parameters, nor on blood pressure. QCT exerted no cardioprotective effect against I/R and even worsened the trend of post-ischemic recovery of heart function. QCT impaired antioxidant capacity by causing a significant increase in FRAP and AOPP parameters, but had no effect on expression of antioxidative enzymes. QCT did not induce global activation of the RISK pathway, moreover decreased PKC- ϵ expression. The effect of QCT as an antioxidant in aged animal model appears to be a rather negative, but its anti-apoptotic properties were promoted. These results are significant in terms of studying the response to QCT as a cardioprotective agent in older individuals.

Keywords: quercetin, myocardium, aging, antioxidant, apoptosis

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