Abstract No. **37**
Category: **Heart Failure and Cardiomyopathies**
Title: **Nano-encapsulated Quercetin Improves Cardioprotection During Hypoxia-Reoxygenation Injury Through Preservation of Mitochondrial Function**
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Abstract:

The effective delivery of antioxidants to the cell is hindered by their high metabolization rate. In this work, Quercetin was encapsulated in nanoparticles of poly(lactic-co-glycolic) acid (PLGA).

This nanovector was characterized in terms of its physicochemical properties: particle size distribution, zeta-potential, encapsulation efficiency, Quercetin release and biological interactions with cardiac cells regarding nanoparticle association, internalization and protective capability against relevant challenges.

A better delivery of Quercetin was achieved when encapsulated vs free. When the cells were challenged with Antimycin A, it supeoxide radical-resulted in lower mitochondrial (4.65- vs 5.69-fold) and H2O2 rate production (1.15- vs 1.73- fold). Similarly under hypoxia-reoxygenation injury, a better maintenance of cell viability was found (77 vs 65 %), reduction of thiols groups (~ 70 vs 40 %). Therefore the delivery of encapsulated Quercertin resulted in a preservation of mitochondrial function and ATP synthesis due to its improved oxidative stress suppression. The results point the potential of this strategy for the treatment of oxidative stress-based cardiac diseases.