Data on Metabolic-dependent antioxidant response in the cardiovascular tissues of living zebrafish under stress conditions

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Abstract

In this article we used transgenic zebrafish lines that express compartment-specific isoforms of the roGFP2-Orp1 and Grx1-roGFP2 biosensors, described in [1], to test the contribute of the pentose phosphate pathway and of the glutathione biosynthesis in the antioxidant capacity of myocardial and endothelial cells in vivo. The transgenic zebrafish embryos were subdued to metabolic inhibition and subsequently challenged with H2O2 or the redox-cycling agent menadione to respectively mimic acute or chronic oxidative stress. Confocal time-lapse recordings were performed to follow the compartmentalized H_2O_2 and E_{GSH} changes in the cardiovascular tissues of zebrafish embryos at 48 hours post fertilization. After sequential excitation at 405nm and 488nm the emission was collected between 500-520nm every 2 minutes for an overall duration of 60 minutes. The 405/488nm ratio was normalized to the initial value obtained before oxidants addition and plotted over time. The analysis and the interpretation of the data can be found in the associated article [1].

Specifications Table

Subject area	*Biology*
More specific subject area	*Cardiovascular Biology*
Type of data	*Figure, analyzed data (.csv)*
How data was acquired	*Confocal Microscope (*Leica Model SP5 and SP8, Leica Imaging Systems Ltd., Wetzlar, Germany)
Data format	*Graph of time-lapse confocal recordings (60 min)*
Experimental factors	*Oxidation of compartment-specific isoforms of the RoGFP2-Orp1 or Grx1-RoGFP2 sensors in the myocardial (myl7:RoGFP2) or endothelial cells (Kdrl:RoGFP2)*
Experimental features	*Real-time detection of roGFP2 Orp1 and Grx1 roGFP2 probes oxidation in living zebrafish exposed to H2O2 or menadione.*
Data source location	*Molecular Biotechnology Center, University of Turin, Italy*
Data accessibility	*Normalized R/R0 data are presented as mean ± SEM in Figs. 1-3. Associated data for each individual fish can be found as .csv files in the supplementary section of the article.*

KEYWORDS