

# Trimetazidine prevents palmitate-induced mitochondrial fission and dysfunction in cultured cardiomyocytes

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© 2014 Elsevier Inc. All rights reserved. Metabolic and cardiovascular disease patients have increased plasma levels of lipids and, specifically, of palmitate, which can be toxic for several tissues. Trimetazidine (TMZ), a partial inhibitor of lipid oxidation, has been proposed as a metabolic modulator for several cardiovascular pathologies. However, its mechanism of action is controversial. Given the fact that TMZ is able to alter mitochondrial metabolism, we evaluated the protective role of TMZ on mitochondrial morphology and function in an in vitro model of lipotoxicity induced by palmitate. We treated cultured rat cardiomyocytes with BSA-conjugated palmitate (25 nM free), TMZ (0.1-100  $\mu$ M), or a combination of both. We evaluated mitochondrial morphology and lipid accumulation by confocal fluorescence microscopy, parameters of mitochondrial metabolism (mitochondrial membrane potential, oxygen consumption rate [OCR], and ATP levels), and ceramide production by mass spectrometry and in