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Novel mechanisms in cardio protection against ischemia/reperfusion injury

Our research interests focus on elucidating the role of mitochondria in the cardio-protective effect of hormones against ischemia/reperfusion(I/R) injury and heart failure. The kind of injury that occurs in several clinical conditions such as: heart transplant, stroke, cardiac bypass, and coronary stenting after acute myocardial injury. Our research goal is to determine the molecular mechanisms involved in cardio protection induced by both acute and chronic administration of sex hormones (estrogen, in particularly). Using both pharmacological and genetic approaches, we are interested in understanding the role of mitochondrial signaling (Mitochondrial Permeability Transition Pore (mPTP) opening, and the electron transfer chain) in estrogen-induced cardioprotective effects against ischemic myocardial injury and heart failure. Using both *ex vivo* and *in vivo* models, we have shown that acute pre-ischemic estrogen (E2) administration protects the myocardium from I/R injury mainly via activation of G-protein Coupled Estrogen Receptor 1 (GPER1), a non-steroidal receptor, in ovariectomized-female and male mouse heart. Interestingly, we established that acute pre-ischemic activation of GPER1 protects the myocardium against I/R injury by inhibiting mPTP opening via the MEK/ERK/GSK-3 β pathway. Moreover, we found that acute postischemic GPER1 activation by E2 also induces cardioprotective effects against I/R injury by reducing mitochondrial protein ubiquitination, acetylation and calpain10 levels and inhibition of the mPTP opening.

Biography

Jean C Bopassa has completed his PhD at the age of 31 years from Claude Bernard University, Lyon1, France and postdoctoral studies from Harvard University and University of California at Los Angeles. Currently, he is an Assistant Professor in the Department of Physiology, in the school of medicine at UTHSCSA. He has published more than 17 papers in reputed journals and has been serving as an editorial board member of several reputed journal.

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