



# Activation of Sonic hedgehog signaling in ventricular cardiomyocytes exerts cardioprotection against ischemia reperfusion injuries

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Titre	Activation of Sonic hedgehog signaling in ventricular cardiomyocytes exerts cardioprotection against ischemia reperfusion injuries
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Auteur	Paulis, Ludovit [1], Fauconnier, Jeremy [2], Cazorla, Olivier [3], Thireau, Jérôme [4], Soleti, Raffaella [5], Vidal, Bastien [6], Ouillé, Aude [7], Bartholomé, Marion [8], Bideaux, Patrice [9], Roubille, François [10], Le Guennec, Jean-Yves [11], Andriantsitohaina, Ramaroson [12], Martinez, Maria Carmen [13], Lacampagne, Alain [14]
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Résumé en anglais	<p>Sonic hedgehog (SHH) is a conserved protein involved in embryonic tissue patterning and development. SHH signaling has been reported as a cardio-protective pathway via muscle repair-associated angiogenesis. The goal of this study was to investigate the role of SHH signaling pathway in the adult myocardium in physiological situation and after ischemia-reperfusion. We show in a rat model of ischemia-reperfusion that stimulation of SHH pathway, either by a recombinant peptide or shed membranes microparticles harboring SHH ligand, prior to reperfusion reduces both infarct size and subsequent arrhythmias by preventing ventricular repolarization abnormalities. We further demonstrate in healthy animals a reduction of QTc interval mediated by NO/cGMP pathway leading to the shortening of ventricular cardiomyocytes action potential duration due to the activation of an inward rectifying potassium current sharing pharmacological and electrophysiological properties with ATP-dependent potassium current. Besides its effect on both angiogenesis and endothelial dysfunction we demonstrate here a novel cardio-protective effect of SHH acting directly on the cardiomyocytes. This emphasizes the pleiotropic effect of SHH pathway as a potential cardiac therapeutic target.</p>
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- [19] <http://dx.doi.org/10.1038/srep07983>
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