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Necrotic inflammation: A novel class of necrosis inhibitor NecroX-7 with therapeutic potential for necrosis-related diseases against ischemic reperfusion injury

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Necrosis is tremendously important in the pathogenesis of multiple diseases. In the case of necrosis, the organelles that need protection are the mitochondria, which sustain considerably more advantage than in apoptosis. In the last decade, mitochondria have provided a vast area of research for the pharmacologist, with potential targets for drug action. A novel class of mitochondria-targeted ROS scavengers, NecroX series (Archives of Pharmacol Research, 2010), was identified and verified the notion that inhibition of mitochondrial defects is critical for necrotic cell viability. It was demonstrated that blockade of mitochondrial ROS generation with NecroX-7 treatment inhibits various types of *in vitro* & *in vivo* necrotic cell death against oxidative stress as well as ischemia/reperfusion injury accompanied by inhibition of mitochondrial permeability transition (mPT) & mPT pore opening, and intracellular cytosolic & mitochondrial calcium overload, which are key features of necrotic pathophysiology. The clinical phase 1 trial of NecroX-7 was completed last year and the phase 2 study for myocardial infarction was initiated in Korea in 2014, which will be presented and discussed. These findings suggest that mitochondrial ROS play a key role in necrotic cell death, and identify a previously undescribed necrotic cell-death pathway as well as offer NecroX-7 as a novel therapeutic candidate for IR injury with an extended window for necrosis-related human pathologies.

Biography

Soon Ha Kim, PhD, is the Director of "NecroX Program" in LG Life Sciences in Korea. He is responsible for developing NecroX-7, a novel class of mitochondria-targeted ROS scavenger, as a therapeutic candidate for the clinical indications including myocardial infarction (MI) under clinical phase 2 in Korea. Since 2006, he is building an open innovation networks with academic and biotech partners. He completed his PhD from Seoul National University in 1998 and conducted Postdoctoral research at The Scripps Research Institute from 1999 to 2004 in USA. His industry career started as a biologist leading drug discovery projects. He worked as a Principal Investigator in the Drug Discovery Unit, R&D Park, LG Life Sciences for 10 years. He has published more than 20 papers in reputed journals.

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