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PARK7 in the pathogenesis of renal fibrosis: The role of the vasoactive compound Angiotensin II (ANGII) and the Platelet Derived Growth Factor (PDGF)

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Oxidative stress (OS) is known to desperately affect the survival and proliferation of renal cells resulting in impairment of kidney function and final progression of renal tubulointerstitial fibrosis. The purpose of present study was to investigate the correlation between oxidative stress and renal fibrosis progression. Further to investigate the effect of profibrotic cytokines on PARK7 expression.

In order to identify new molecular targets associated with oxidative stress induction and renal fibrosis, cells were treated with profibrogenic agonists PDGF and oxidative stress triggering factors ANGI, and the proteome alterations were investigated. 2D gel analysis coupled with mass spectrometry was performed with established renal cell lines (TK173 and HK-2). The *in vitro* results were further confirmed with Col4A3 knockout mice as a fibrosis model.

2D gel analysis showed that an increase of ROS in the renal cell lines upon the different treatments was accompanied by alteration of a large number of proteins. Differentially regulated proteins were classified into different functional categories by the DAVID bioinformatic database resource. A major category was proteins responding to stress and involved in OS pathway. As part of OS response, we identified an over expression of PARK7, PRDX1, PRDX5, PRDX6, SOD1, SOD2). Immuno-histochemical and Western blot analyses of progressive stages of Col4A3 knockout mice further showed an enhanced expression of these OS proteins with progressive increase in fibrosis. Identifying PARK7 interaction partners and characterizing the mechanism of its action further clarified the role of PRK7 in balancing OS in renal fibrosis.

The present study suggests a direct correlation of fibrosis progression and expression of OS proteins.

Biography

Marwa Eltoweissy completed her PhD at the age of 30 through a scholarship and cooperation work between faculty of Science, Alexandria University, Egypt and Rheinische Friedrich-Wilhelms-University Medical Center Bonn, Institute for Physiology II, Germany. She achieved her postdoctoral studies from Gastroenterology and Endocrinology department, Georg-August University Medical Center, Göttingen, Germany. She works as scientific researcher at the Nephrology and Rheumatology department, Georg-August University medical center, Göttingen, and as an Assistant Professor of Physiology, Zoology department, Alexandria University, Egypt. She has published 15 papers in reputed journals and serving as reviewer for privileged journals.

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