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The mitochondrial serine/threonine protease Omi/HtrA2 induced cardiomyocytes apoptosis by promoting cytochrome C to release

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Objective: The main reason of cardiac dysfunction is apoptotic death of cardiomyocytes, but the intact mechanisms are still unclear. Many studies recently showed that Omi/HtrA2, a mitochondrial protease, could induce cardiomyocytes apoptosis through binding to XIAP. According to our previous experiments, other pro-apoptotic ways initiated by Omi/HtrA2 exist in heart. Now, study is designed to determine that Omi/HtrA2 promote cardiomyocytes apoptosis via cytochrome C release.

Methods: Myocardial tissues of Sprague Dawley rats (20-24months) were collected, then expression of Omi/HtrA2 was detected by Western blot. The activities of caspase-9 and caspase-3 were determined by fluorescence microplate reader. Furthermore, H9c2 cell lines transfected stably with mitochondrial Omi/HtrA2 were constructed. The protein and mRNA levels were analysed for determination of over-expression over-expressed mitochondrial Omi/HtrA2. Cytosolic fractions of over-expressed Omi/HtrA2 cells were collected by different centrifugation, then the protein level of cytochrome C in cytoplasm were analysed by Western blot.

Results: The results suggested that expression of Omi/HtrA2 and the level of apoptotic death were significantly increased in aging myocardial issue. Moreover, the activities of caspase-3 and -9 in over-expressed Omi/HtrA2 cells were elevated. The release of cytochrome C in over-expressed Omi/HtrA2 cells was significantly increased, which was alleviated by the specific Omi/HtrA2 inhibitor, ucf-101.

Conclusions: These results demonstrate that increased expression of Omi/HtrA2 in aging cardiomyocytes promotes apoptosis via release of cytochrome C.

Biography

Huirong Liu has completed her PhD at the age of 40years from Shanxi Medical University and Postdoctoral studies from Thomas Jefferson University Jefferson Medical College. She is the Director of the Department of Pathophysiology of Capital Medical University. She has published more than 47 Tpapers that included in Science Citation Index.

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