Roles of NADPH-oxidases (NOXs) in cisplatin-induced ototoxicity

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In our previous study, we clearly demonstrated the roles of pro-inflammatory cytokines, including TNF-α, IL-1β, and IL-6, and subsequent ROS generation on the pathogenesis of cisplatin ototoxicity in vivo and in vitro. ROS generation in cisplatin-treated HEI-O1 auditory cells was also correlated with changing mitochondrial membrane potential. However, the roles of NADPH oxidase in cisplatin-induced ROS generation and ototoxicity have not been fully elucidated. Herein, immunohistochemical studies demonstrated that treatment of cisplatin induced the expression of NADPH oxidase isoforms Nox-1 and Nox-4 in HEI-O1 auditory cells. Expression of mRNA for Nox-1, Nox-4, NOXO1, p22-phox, and p67-phox was also increased. Inhibition of NADPH oxidase with diphenylene iodonium suppressed the subsequent apoptotic cell death in cisplatin-treated cells. Furthermore, suppression of NADPH oxidase with diphenylene iodonium markedly abolished the cisplatin-inducedROS generation and apoptosis in cisplatin-treated cells. Taken together, these findings indicate that Ssk2 is the critical interface protein connecting the two-component system and the Pbs2/Hog1 pathway in C. neoformans.

Proteomics study of the whole and cytosolic proteins of dimethylnitrosamine-treated rat liver tissue

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Liver fibrosis has been recognized as a worldwide health problem. In this study, dimethylnitrosamine (DMN) was intraperitoneally injected into Sprague-Dawley rats three times a week in 3 consecutive days for 3 weeks. 25 μg/kg body weight of DMN dose was used each time. In 6 weeks since the first treatment, the rats were sacrificed and the liver tissues were taken. Liver whole proteins and cytosolic proteins were obtained for the proteomic analysis using two-dimensional gel electrophoresis followed protein identification through MALDI-TOF. Changes of whole and cytosolic protein patterns in response to DMN treatment were identified from comparison to the corresponding patterns of the control group. The expression levels of formiminotransferase cycloamaminase, aldehyde dehydrogenase, and etc. were found to be altered, which was concluded from whole liver proteome comparison. And minor changes were identified from analysis of cytosolic proteome of the dimethylnitrosamine-treated rat livers. These results will be valuable to study the proteome analysis of DMN metabolism.