P 44

Characterization of gene expression under the treatment of acetoxyscirpendiol isolated from *Paecilomyces tenuipes*

Eui-Jung Chung , Dong-Hee Lee, Kyungyi Choi, and Ha Won Kim
Department of Life Science, University of Seoul 90 Jeonnong-Dong, Dongdaemun-Gu, Seoul 130-743, Korea.
leedh@uos.ac.kr

Paecilomyces tenuipes has been known to contain ingredients inducing differentiation and to inhibit cell growth in various malignant cell types. Indeed extracts from *P. tenuipes* affects cell growth in various cancerous cell lines. Molecular mechanism, however, is poorly understood concerning the potential antitumor components and their functions. Using methanolic extracts of *P. tenuipes* (MPT) and acetoxyscirpendiol (ASD) from MPT, this study characterized the molecular profile of their antitumor potential under the treatment of the two compounds according to a differential display protocol. At least 24 genes were recognized as their expression was modulated. Cyclins C, D, and Mad-1 were identified as primary cell cycle genes responding to the treatment. Analysis of mRNA and protein expression confirmed that they responded as primary genes to MPT. When RT-PCR was performed on the total RNA from MCF-7 treated by MPT or ASD, gene expression for cyclin C, D, and Mad-1 was greatly augmented under MPT treatment. In terms of protein expression, cyclin C level increased up to 12 folds during the time course of cyclin D expression in response to ASD as well as MPT. Similar as MPT treatments, ASD-treated cells synthesize cyclin C as 2-4 fold induction compared to control treatments. In terms of Mad-1 expression in cells treated with ASD, the level of Mad-1 expression increased up to 2.5 folds by MPT treatment. Expression of cyclins C and D was compared with non-treated cells in various cell lines. Equal aliquots of cellular extracts were immunoblotted. MCF-7 cell was highly responsive to MPT or ASD treatment. These results indicate that MPT contains potential antitumor components, such as ASD, which might exert their action by modulating cell cycle-related genes such as cyclin C and Mad-1 in MCF-7.

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