

**Molecular characterization of *Coriolus versicolor* PSP-induced apoptosis in human promyelotic leukemic HL-60 cells using cDNA microarray.**

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Proteins and peptide bound polysaccharides (PSP) extracted from Basidiomycetous fungi are widely used in cancer immunotherapy and recently demonstrated to induce apoptosis in cancer cells in vitro. In order to provide the molecular pharmacological mechanisms of PSP on human cancer cells, we investigated the gene expression profiles of PSP-treated apoptotic human promyelotic leukemic HL-60 cells using ResGen 40k IMAGE printed cDNA microarray. In total 378 and 111 transcripts were identified as differentially expressed in the apoptotic cells by at least a factor of 2 or 3, respectively. Our data show that PSP-induced apoptosis in HL-60 cells might be mediated by up-regulation of early transcription factors such as AP-1, EGR1, IER2 and IER5, and down-regulation of NF-kappaB transcription pathways. Other gene expression changes, including the increase of several apoptotic or anti-proliferation genes, such as GADD45A/B and TUSC2, and the decrease of a batch of phosphatase and kinase genes, may also provide further evidences in supporting the process of PSP induced apoptosis in cancer cells. Some of the well-characterized carcinogenesis-related gene transcripts such as SAT, DCT, Melan-A, uPA and cyclin E1 were also alternated by PSP in the HL-60 cells. These transcripts can be employed as markers for quality control of PSP products on functional levels. The present study provides new insight into the molecular mechanisms involved in PSP-induced apoptosis in leukemic HL-60 cells analyzed by cDNA microarray.