# Effects of extracts of Coriolus versicolor (I'm-Yunity) on cell-cycle progression and expression of interleukins-1 beta,-6, and -8 in promyelocytic HL-60 leukemic cells and mitogenically stimulated and nonstimulated human lymphocytes.

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OBJECTIVE: The goal of this in vitro study was to test the cytostatic and cytotoxic activities of extracts derived from the polysaccharopeptide (PSP), I'm-Yunity (Integrated Chinese Medicine Holdings Ltd., Kowloon, Hong Kong) prepared from strain Cov-1 of the mushroom Coriolus versicolor. DESIGN: Different volumes of 70% ethanol and water extracts of I'm-Yunity were incubated with cultures of human promyelocytic leukemic HL-60 cells, and compared to nontreated control cells. At various times after treatment, cells were harvested and analyzed with respect to: (1). proliferation and cell cycle phase distribution, (2). induction of apoptosis, and (3). changes in expression of the immunomodulating cytokines interleukin (IL)-1 beta, IL-6, and IL-8. To test whether extracts also affected normal cells, similar experiments were also performed using isolated peripheral blood lymphocytes from healthy volunteers, with and without stimulation by the mitogen phytohemagglutinin (PHA). The ability of extracts to affect the secretion of IL-1 beta, IL-6, and IL-8 were assessed by enzyme-linked immunosorbent assay. RESULTS: HL-60 cells incubated with various amounts (1, 3, 5, 7.5, and 10 micro l/mL) of the extracts for 1-3 days showed dose-dependent, time-dependent growth suppression and decrease in cell viability. Flow cytometric analysis revealed partial cell arrest in the G(1) phase at less than 5 micro L/mL and induction of apoptosis at 10 micro L/mL or more of ethanol and water extracts, with the latter exhibiting more pronounced inhibition than the former. Experiments performed with lymphocytes demonstrated that extracts of I'm-Yunity alone were without effect; moreover, they also did not affect the lymphocyte response to PHA. Water extract of I'm-Yunity also significantly increased IL-1 beta and IL-6 while substantially lowering IL-8. CONCLUSIONS: I'm-Yunity acts selectively in HL-60 leukemic cells, resulting in cell cycle restriction through the G(1)/S checkpoint and the induction of apoptosis.