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Abstract
The cordyceps is among the extremely popular medicine in Chinese medicine field since many researchers struggle to studies for its widespread medical curative effect and the economic value. Especially for cordyceps sinensis, many researches try to aim at uses artificially cultivated of cordyceps sinensis mycelium because the wild fruit bodies of cordyceps sinensis is extremely precious and obtained so difficulty. In previous study had indicated that the Paecilomyces farinosus isolated from fruit body of cordyceps sinensis have the ability to inhibit growth of Human hapatoma cell line. In this study, we have further investigated the mechanism of Paecilomyces farinosus myceliums water extract (PFW) suppressing the hapatoma cell line growth. It contain five issues : the cytotoxic assay, the cell cycle test, the cell apoptosis assay, the caspase protein activeness test and the proteomic assay. In cytotoxic assay, we observed the effective density of PFW that inhibit the HepG2 cell growth for a period of time. Results indicated the IC50 was 1.2 mg/ml when the HepG2 cell stimulated with PFW for 72 hours. It also revealed that the conspicuous suppression effect were approximately 57 % with density of the 1.5 mg/ml rised to approximately 79 % when density arrives 3mg/ml. Further analyzes the effectiveness of PFW to inhibit cell growth of HepG2 cell when treated the cells with PFW 24 and 48 hours. The results revealed that the comparative growth suppression were to 40 %, 47 % and 55 % when PFW concentration of 1.5 mg/ml, 1.75 mg/ml and 2 mg/ml respectively in 48 hours. In cell cycle and cell apoptosis assay, the effect of PFW on HepG2 cell was observed by Flow cytometry. When the HepG2 cells were treated by PFW with concentration of 1.5 mg/ml and evaluated at 24, 36 and 48 hours separately after treatment, the cells with ratio of G0/G1 increase and with ratio of G2/M decrease (the control group: G0/G1:68.95 %, G2/M:21.81 %; PFW 1.5 mg group: G0/G1:79.54 %, G2/M:17.27 %) in 36 hours, and the control group: G0/G1:55.53 %, G2/M:17.63 %; PFW 1.5 mg group: G0/G1:83.44 %, G2/M:1.27 %) in 48 hours. In cell apoptosis assay, we found that the HepG2 cell would induced cell apoptosis by treatment of with PFW 1.5 mg/ml and the 2 mg/ml in 48 and 60 hours respectively ($p<0.005$) (48 hours: Control group: 0.83 %, PFW 1.5 mg/ml group 15.62 %, PFW 2 mg/ml group 18 %; 60 hours: Control group: 1.73 %, PFW 1.5 mg/ml group 24.42 %, PFW 2 mg/ml group 31.13 %). In caspase protein activity assay, we found that the activity of Caspase-3 protein increased along with stimulation of PFW. Caspase-3 protein activity can achieve highest (the O.D value is 0.5463) at 24 hours. The activity of caspase 8 of HepG2 cells, however, didn’t show different between treatment and control group. We also revealed that caspase 9 activity in HepG2 cells increase when cells

treated with PFW. These data suggested that PFW induce HepG2 apoptosis through the caspase 9 – caspase 3 signal transduction pathway. Finally, the proteomic assay analysis revealed the obviously different proteins expression in HepG2 cell by treatment of PFW with 1.75 mg/ml in 24 hours.
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