In vitro study on influence of a discrete nano-hydroxyapatite on leukemia P388 cell behavior

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Abstract
Influence of a discrete nano-hydroxyapatite crystal (nano-HAp) on lymphatic leukemia P388 cell behavior was investigated by an in vitro technique using an MTT test and FITC analysis. The discrete nano-HAp was prepared by decanting upside clear layer of the nano-HAp suspension which was synthesized by a wet method using calcium hydroxide suspension and phosphoric acid solutions. The nano-HAp was identified as hydroxyapatite by the X-ray powder diffraction pattern and an infrared spectroscopy. The nano-HAp with concentrations of 8–40 μg/ml was dispersed into PRMI 1640 media with leukemia cells derived from BALB/C mice. The survival ratio of the cells decreased with the amounts of the nano-HAp increasing. Apoptosis rates of leukemia P388 cells on co-culturing with the nano-HAp of 35 μg/ml for 24, 48 h were 14.5% and 45.8%, respectively, and higher than those of 10.4% and 34% in controls. The G0/G1 peak values in leukemia P388 cell cycle were declined to reduce and the S peak values increased with extension time of co-culture. These results proved that the discrete nano-HAp can cause apoptosis of the leukemia P388 cells, and selectively act on G1 phase and arrest the G1 phase in cell cycle of the leukemia P388.