

A-11 THE EFFECT OF KOREAN RED GINSENG SAPONIN ON THE GROWTH AND DIFFERENTIATION OF HUMAN PERIODONTAL LIGAMENT CELL IN CULTURE

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This paper reports on defining the cytotoxic effect of total saponin, major compartment of Korean red ginseng, on cultured periodontal ligament (PDL) cells and knowing the effect of the total saponin on growth and differentiation of the PDL cells in vitro.

To detect the cytotoxic effect of total saponin on PDL cells, the cells were cultured in the DMEM adding to various concentration of total saponin for 1 week and grown the cell under th one concentration (1µg/ml) for same period and then cell count was used to hemocytometer. To define the activity of alkaline phosphatase, on osteoblastic characteristic, of the PDL cells, the cells were cultured in the DMEM adding to various total saponin concentration (0.1, 1 and 10µg/ml). Then the medium was added to 8 mM p-nitrophenylphosphate (p-NPP) for the enzyme reaction. The reaction was stopped by adding 0.1N NaOH. After the termination, the amount of p-nitrophenol (p-NP) liverated was determined at 410 nm using a spectrophotometer. The protein content was measured by Lowry's method using bovine serum albumin (BSA) as a standard. After the PDL cells were cultured in the DMEM supplemented with 50 g/ml ascorbic acid, 15mM β-glycerophosphate and 1µg/ml of total saponin to define the effect of the total saponin on differentiation of the PDL cells having the phenotypes typical of osteoblast, produced bone nodule was counted by LM using von Kossa's staining. The results are as followes.

1. After the various concentration of total saponin was added in the medium, the cytotoxic effect of total saponin on the PDL cells was increased in 1mg/ml concentration.
2. 7 days after addition of 0.1, 1, 10 and 100µg/ml of total saponin, the cell viability was increased significantly in all concentration.
3. 7 days after addition of 0.1, 1, 10 and 100µg/ml of total saponin, the cell proliferation was increased significantly in 0.1, 1, and 10µg/ml of total saponin.
4. 1µg/ml of total saponin increased the proliferation of PDL cells, as the time span increased.
5. 10µg/ml of total saponin increased the activity of alkaline phophatase significantly.
6. ALP (+) cells were seen in cultured PDL cells by histochemistry.
7. The bone formation was seen in cultured PDL cells by von Kossa's staining