from kimchi plays an important role in the prevention of enteric infections. And the proliferative responses of spleen cells to concanavalin A (a T-cell mitogen) and lipopolysaccharide (a B-cell mitogen) were also siginificantly enhanced in mice feeding LAB from kimchi. So, we proposed that antitumor activity of LAB from kimchi is through macrophage activation and oral administration of LAB from kimchi enhanced immune system.

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Induction of apoptosis of human monocytes by human cytomegalovirus

Myung Sook Moon[*1], Yeon-Hee Cho[*1] and Chan H. Lee[*1,2]

Division of Life Sciences[1], and Research Institute for Genetic Engineering[2], Chungbuk National University, Cheongju, Chungbuk 361-763

Effect of human cytomegalovirus (HCMV) on three human monocyte cell lines at different stages of differentiation was investigated. While the viability of HL60 cells or U937 cells was not significantly affected by HCMV infection, the viability of THP-1 cells was reduced. Acridine orange/ethidium bromide staining revealed that the reduction of THP-1 cell viability was due to increased apoptotic death following HCMV infection. Apoptosis of HL60 cells was not affected by HCMV infection, and induction of apoptosis of U937 cells by HCMV was intermediate of HL60 and THP-1 cells. Since HL60 cells are the least differentiated and THP-1 cells are the most differentiated the induction of apoptosis of human monocytes appears to be related with the degree of cell differentiation. Induction of apoptosis of THP-1 cells by HCMV did not require viral gene expression, since UV-inactivated HCMV also induced THP-1 cell apoptosis. Physical contact of HCMV virion particles with THP-1 cells seemed to be required for apoptosis because apoptosis was reversed by treating virus-infected cells with heparin, preincubating virus particles with trypsin or THP-1 cells with heparinase. Fluorescence and confocal microscopy using fluorescent calcium indicator Fluo-3 suggested an increase in cytosolic calcium concentration in THP-1 cells undergoing apoptosis. Calcium influx blcokers such as verapamil and nifedipine partially reversed HCMV-induced apoptosis of THP-1 cells.

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Interaction of Human Cytomegalovirus Particles with Heparan Sulfate on the Cell Surface Stimulates Human Leukocyte Antigen Class I Expression

Byung H. Song[*1], Gyu C. Lee[*1] and Chan H. Lee[*1,2]

Division of Life Sciences[1], and Research Institute for Genetic Engineering[2], Chungbuk National University, Cheongju, Chungbuk 361-763

Human cytomegalovirus (HCMV) is known to down-regulate the expression of HLA class I, of which process involves a subset of viral genes. Infection of human fibroblast cells with UV-inactivated HCMV (UV-HCMV), however, resulted in an enhancement of HLA class I expression. Heparin, which can interfere with interaction of viral particles with heparan sulfate proteoglycans on the cell surface, completely blocked the effect of UV-HCMV on HLA class I expression. Treatment of cells with heparinase or UV-HCMV with trypsin decreased in a dose-dependent manner the effect of UV-HCMV on enhancing HLA class I expression. Sodium chlorate, which is known to inhibit the sulfatation of heparan sulfate proteoglycans, gave a similar result. Thus, binding of HCMV particles to heparan sulfate proteoglycans on the cell surface appears to be involved in enhancement of HLA class I expression.