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The effect of 15-deoxy-PGJ_2 on the differentiation of embryonic midbrain cells into dopaminergic neuronal cells, and the relationship between cell differentiation with activation of PPAR-γ and possible signal pathway were investigated. 15-Deoxy-PGJ_2 increased neurite extension, a typical characteristics of the differentiation of embryonic midbrain cells isolated from 12 day's rat embryos in a dose-dependent manner. The expression of differentiation markers; neurofilament and tyrosine hydroxylase was also increased by the treatment of 15-deoxy-PGJ_2. Consistent with the increasing effect on the cell differentiation, 15-deoxy-PGJ_2 increased the expression and transcriptional activity of PPAR-γ in the cultured embryonic midbrain cells. In addition, the expression of PPAR-γ and NeuN in the differentiated neuron of fetus (17 day) and adult rat brain was co-localized. Furthermore, treatment of PPAR-γ antagonist bisphenol A diglycidyl ether blocked 15-deoxy-PGJ_2-induced neuronal differentiation of embryonic midbrain cells and expression of PPAR-γ. 15-Deoxy-PGJ_2 (0.5 μM) increased the expression of JNK and p38 kinase but not ERK. In addition, in the presence of NGF (50 ng/ml), only the expression of JNK was further increased. Moreover, the pretreatment of specific p38 kinase inhibitor, PD98053 did not inhibit the activation of p38 kinase, but specific inhibitor of JNK, SP 600125 inhibited JNK activation. This inhibition correlated well with the inhibition of neurite extension and activation of PPAR-γ induced by 15-deoxy-PGJ_2. The present results therefore indicate that 15-deoxy-PGJ_2 stimulates differentiation of embryonic midbrain cells into dopaminergic neuronal cells, and its effect may be PPAR-γ and JNK signal pathway dependent.

Poster Presentations - Field B4. Immunology

[PB4-1] [04/18/2003 (Fri) 09:30 - 12:30 / Hall P]

Proliferation of Splenocytes and Bone-marrow Cells by Phellinus linteus polysaccharide

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The effect of radio- and chemotherapy for cancer are excellent, but their toxicities to normal tissue and organ of the body is relatively strong, which leads secondary side effect to patients during therapies. Particularly, due to the response for bone marrow suppression such as agranulocytosis limits the therapy periods and dose of drugs, new drug development that reproduces lymphocytes has been focused. In line with this, we have come to select Phellinus linteus polysaccharide as an agent increasing the level of white blood cell and spleen cell and promoting CMI as well as humoral immunity. Phellinus linteus polysaccharide was scheduled to treat with PL-A (<20,000), PL-B(20,000 ~ 100,000), PL-C(>100,000) and negative control, CTX (cyclophosphamide). There are differences in their MW of polysaccharides, but all doses reproduced in dose-dependant manner. These results provided that Phellinus linteus polysaccharide can increase the process of hematopoietic response and promote and control the growth and differentiation of immune cells as well as reduction of side effect of CTX in over a studied concentration. In conclusion, Phellinus linteus polysaccharide can reduce cytotoxicity to hematopoietic system by anticancer agents, and be expected to be an excellent adjuvant agent when using radio- and chemotherapy.