protein mapping. According to the results, 1) Western blot analysis shows that pp60c-src kinase is activated by new phosporylation of the protein shifting the protein from lower band (inactivated form) to upper band (activated form). 2) 2D protein map analysis reveals that G-Rg1 treated total cell protein has increased protein expression in 12 different proteins including src kinase.
Taken together, these results suggest that the activation of c-src kinase by G-Rg1 is caused by an increase in the specific activity of the kinase. We suggest that ginsenoside Rg1 may lead to cell proliferation via the activation of cellular signal transduction pathway involving pp60c-src kinase.

[PC1-4] [04/19/2001 (Thr) 15:30 - 16:30 / Hall 4]

Costunolide Induces Mitochondrial Permeability Transition and Cytochrome C Release Through ROS Generation

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Costunolide is an active compound isolated from the root of *Saussurea lappa* Clarks, a Chinese medicinal herb, and is considered a therapeutic candidate for various types of cancers. Nevertheless, the pharmacological pathways of costunolide are still unknown. In this study, we investigate the effects of costunolide on the induction of apoptosis in HL-60 human leukemia cells and its putative pathways of action. Using apoptosis analysis, measurement of reactive oxygen species (ROS), and assessment of mitochondrial membrane potentials, we show that costunolide is a potent inducer of apoptosis, and facilitates its activity via ROS generation, thereby inducing mitochondrial permeability transition (MPT) and cytochrome c release to the cytosol. ROS production, mitochondrial alteration, and subsequent apoptotic cell death in costunolide-treated cells were blocked by the antioxidant N-acetylcystein (NAC). Cyclosporin A, a permeability transition inhibitor, also inhibited mitochondrial permeability transition and apoptosis. Our data indicate that costunolide induces the ROS-mediated mitochondrial permeability transition and resultant cytochrome c release. This is the first report on the mechanism of the anticancer effect of costunolide.

[PC1-5] [04/19/2001 (Thr) 15:30 - 16:30 / Hall 4]

Intermedeol Induces Differentiation and Apoptosis of Human Leukemic cell HL-60

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Intermedeol, a sesqueterpene isolated from Ligularia Fischery var., has a antitumor activity by induction of cell differentiation and apoptosis in HL-60. Intermedeol inhibited cell proliferation in a dose- and time-dependent manner and induced differentiation toward granulocyte and monocyte/macrophage lineages. Markers of differentiation, NBT reduction and expression of CD14 and CD66 surface antigens, were significantly increased in dose-dependent manner. Concentration of Intermedeol >40㎍/㎖ rapidly induced apoptosis. These apoptotic features were identified by increasing of hypodiploid nuclei and early phosphatidylserine externalization. These events were accompanied by a decline in the expression of c-Myc and Bcl2 protein. These results suggest that Intermedeol induce differentiation and apoptosis in HL-60 cells

[PC1-6] [04/19/2001 (Thr) 15:30 - 16:30 / Hall 4]