

morphological and physiological characteristics of strain PM 718 were investigated. The spore morphology, spore chain morphology and spore surface were observed by scanning electron microscope. The inhibitory activity of strain PM718 *in vivo* has been studied in mice made hyperglycemia by Streptozotocin treatment. The strain PM718 showed significant reduction of blood glucose level (more than 30%) in mice loaded with maltose.

[PC2-14] [10/17/2002 (Thr) 13:30 - 16:30 / Hall C]

Mn²⁺ dependent ClpL ATPase in *Streptococcus pneumoniae*

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HSP100/Clp family functions as molecular chaperone and ATP dependent protease. The *Streptococcus pneumoniae* ClpL, a homologue of bacterial ClpB and yeast cytosolic HSP104, is one of major heat shock proteins but its biochemical properties are unknown. In this study, ClpL in *Streptococcus pneumoniae* was characterized using histidine tagged recombinant ClpL. When ATP hydrolysis activity was compared in the presence or absence of a variety of nucleotides or divalent ions, either ATP or Mn²⁺ ion was found to increase significantly the rate of ATP hydrolysis. Furthermore, glutaraldehyde cross-linking and subsequent native-PAGE analysis showed that ClpL forms dimer, but in the presence of 4 mM concentration of Mn²⁺ ion, ClpL was aggregated. Thus ClpL seems to require Mn²⁺ ion as a cofactor for ATP hydrolysis and oligomerization *in viro*.

Poster Presentations – Field C3. Cell Biology

[PC3-1] [10/17/2002 (Thr) 13:30 - 16:30 / Hall C]

Vitamin K Antagonist, NQ12 Inhibits PDGF-BB-Induced MAP Kinases Activation in Rat Aortic Vascular Smooth Muscle Cells

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Several 1,4-naphthoquinone derivatives have been reported to possess many pharmacological effects such as anti-viral, anti-fungal, anti-cancer and anti-platelet activities. We have reported that 2-chloro-3-[4-(ethylcarboxy)-phenyl]-amino-1,4-naphthoquinone(NQ12) had a potent inhibitory effect on the platelet aggregation *in vitro* and thrombosis *in vivo*. However, little has been known about functional role of NQ12 on vascular smooth muscle cells (VSMCs). In this study, we examined a possible antiproliferative effect of NQ12 on rat aortic vascular smooth muscle cells (VSMCs). NQ12 (1-5 μM) significantly inhibited the PDGF-BB-induced proliferation in a dose-dependent manner on rat aortic VSMCs. We also examined the intracellular signaling effect of NQ12 on the PDGF-BB-induced activation of mitogen-activated protein kinase (ERK1/2) by western blotting in cultured rat VSMCs. Pretreatment of rat VSMCs with NQ12 resulted in a significant inhibition of the PDGF-BB-induced ERK1/2. There was no evidence of cellular toxicity or apoptosis of NQ12 (5μM) as determined by trypan blue exclusion assay, flow cytometric analysis and DNA fragmentation assay. These results suggest that the antiproliferative effects of NQ12 may be exerted by the inhibition of the PDGF-BB-induced ERK1/2, which can contribute to prevent atherosclerosis by inhibiting VSMCs proliferation.

[PC3-2] [10/17/2002 (Thr) 13:30 - 16:30 / Hall C]

Involvement of Akt in naphthoquinone analog-induced apoptosis in HL-60 cells