during aging and down-regulated by CR. Increased CAMs might contribute to the pathophysiological process of vascular aging.

[PC1-28] [04/18/2003 (Fri) 09:30 - 12:30 / Hall P]

Role of hydrogen peroxide in Rac1 mediated activation of p70s6k signaling pathway

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The signal transduction pathway leading to the activation of the p70s6k plays an important role in the progression of cells from G0/G1 to S phase of the cell cycle but remains incompletely characterized. We investigated the role of the Rho family G protein Rac1 in H2O2-mediated p70s6k activation. Transient expression of a dominant negative mutants of the small GTP-binding proteins Rac1 (Rac1N17) and Cdc42 (Cdc42N17) showed reduced levels of slower migration on Western blots of one-dimensional SDS-PAGE in p70s6k and ERK1/2 by PDGF stimulation. Treatment of NIH-3T3 cells with PDGF led to a rapid increase in H2O2, phosphorylation and activation of p70s6k, which were antagonized by the expression of catalase. In an effort to further explore how Rac1 proteins regulate p70s6k activity, we investigated with stable expression of a constant active mutant of Rac1 (Rac1V12) in Rat2 cells, which resulted in a significant increase in intracellular reactive oxygen species (ROS) and S6 kinases (p70s6k and p90rsk) activity. In addition, stable expression of Rac1N17 also inhibited ROS production and PDGF-induced activation of S6 kinases. Rac1V12 transfected Rat2 cells had a considerably faster growth rate and Rac1N17 had a growth-inhibitory effect, compared with control cells transfected with the expression vector alone, indicating that Rac1-induced H2O2 might act as an upstream molecule of p70s6k as well as ERK1/2, p90rsk upstream kinase. Taken together, these results suggest that Rac1 regulates ROS production and leading to p70s6k activation, which have been linked to cell growth.

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Correlation between signal pathway of chitosan and nitric oxide

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Renal dipeptidase (RDPase, EC 3.4.13.19), an ectoenzyme of renal proximal tubules, is covalently bound to outer leaflet of lipid bilayer via glycosylphosphatidylinositol (GPI)-anchor. Chitin is a major component of the shells of crustacea such as crab, shrimp and crawfish. This study was conducted to examine the effect of chitosan on RDPase release from renal proximal tubules. Nitric oxide (NO), highly reactive free radical, inhibits the release of RDPase from porcine proximal tubules. Porcine proximal tubules were prepared with the protocol of Taub et al (1990) and were treated with L-arginine (0,1,5,10 and 20mM, substrate of NO synthase), and chitosan (0.01, 0.05 and 0.1%) in the presence of L-arginine (10mM) for 20 min at 37℃ followed by centrifugation (18000g, 5min). The activity of released RDPase was assayed according to the fluorometric method of Ito et al (1984). Nitrite was determined spectrophotometrically using the Griess reagent. It was observed that the RDPase release was decreased and NO concentration was increased in a concentration-dependent manner of L-arginine. The decreased RDPase release by L-arginine recovered as a function of chitosan concentration. However, nitrite