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Protein Kinase CKII Inhibition-Induced Senescence is P53-Dependent

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Protein kinase CKII plays a critical role in cell growth and proliferation. The expression level of CKII is greatly enhanced in a variety of tumor or leukemic cells. We have previously shown that downregulation of CKII activity is tightly associated not only with cellular senescence but also with organism aging. Here, we examined the role of p53 in senescence development induced by CKII inhibition, by using wild-type and isogenic p53(-/-) HCT116 HCT116 human colon cancer cell lines. Treatment of wild-type HCT116 cells with CKII inhibitors or CKIIα siRNA resulted in the appearance of a senescent marker, senescence-associated β-galactosidase staining; and this response was almost abolished in p53-null cells. Similar results were also obtained by using the isogenic p21(-/-) HCT116 cells. CKII inhibition-mediated senescence was suppressed when the DNA binding activity of p53 was inhibited by pifithrin-α in wild-type HCT116 cells. CKII inhibition-induced senescence increased the protein levels of p53 and p21 in wild-type HCT116 cells. In addition, senescence induced by CKII inhibition decreased phosphorylation of Rb. Taken together, these data demonstrate that CKII inhibition mediates cellular senescence mainly through the p53-$p21^{Cip1}$pathway.

Key words: Protein Kinase CKII, P53, Senescence

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An Ecological Study on the Flora and Communiteis of Mt. Sinbul Wetland

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The Mt. Sinbul wetland and surrounding area was investigated from March, 2007 to September, 2008. The vascular plants of this area consist of 134 taxa, 7 formas, 22 varieties, 105 species, 90 genera, 41 families and 27 orders. The life form spectrum were Megaphanerophyte 6%, Microphanerophytes 5%, Nanophanerophytes 8%, Chamaephytes 3%, Geophytes 21%, Hemicryptophytes 27%, Hydrophytes 22%, Therophytes 8%. The Macro-hydrophyte of this area consist of 27 taxa, 1 forma, 3 varieties, 23 species, 14 genera, 12 families and 11 orders. The life form spectrum of Macro-hydrophyte were Hygrophytes 84%, Emergent plants 16%. The vegetation was classified into 20 communities (*Molinia japonica, Eriocaulon miquelianum, Eriocaulon sikokianum, Pogonia japonica, Utricularia yakusimensis, Miscanthus sinensis, Miscanthus sinensis-Reynoutria japonica, Scirpus wallichi, Scirpus karuizawensis, Arundinella hirta, Tripterygium regelii, Quercus mongolica, Alnus japonica, Rhododendron mucronulatum, Quercus dentata, Symplocos chinensis* for. *pilosa, Juncus effusus, Juncus effusus - Miscanthus sinensis, Rubus crataegifolius - Miscanthus sinensis, Weigela subsessilis* communities).

Key words: Mt. Sinbul wetland, Life form spectrum, Flora, Communiteis