【P-34】

# Mutational profiling of p53 gene in human breast epithelial cells (MCF10A) exposed to Benzo(a)pyrene(BaP) or N-Methyl-N'-nitro-N-nitrosoguanidine(MNNG)

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Mutations of p53 tumor suppressor gene have been associated with exposure to carcinogens. Cultured human breast epithelial cells (MCF10A) were treated with Benzo(a)pyrene(BaP) or N-Methyl-N'-nitro-N-nitrosoguanidine(MNNG). MCF10A cells were grown in DMEM/F12 medium and treated for 6, 12, 24, 48 and 96h with BaP (1, 10 and 100 μM) and MNNG (0.25, 2.5 and 25 μM) dissolved in dimethylsulfoxide(DMSO). DNA was isolated from MCF10A treated with carcinogens and exons 5-9 of p53 gene were amplified with polymerase chain reaction. The PCR products of p53 gene were analyzed for mutations with direct sequencing. Point mutations induced BaP were higher in codon 129/exon 5, 225/exon 7 and codons 263, 282, 286/exon 8 than any other site. MNNG also induced various point mutations. The point mutations caused from MNNG were mainly at codon 129/exon 5. The p53 mutations were not affected by exposure dose and incubation time, but highly site-specific. The mutational profile of p53 in human normal cells can help identify particular carcinogens and define the biochemical mechanisms responsible for the genetic lesion in DNA that cause human cancer.