P118 The change factor of the chromosomal aberration induction ability by Benzo[a]pyrene

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It is desirable to obtain the background data stabilized in the chromosomal aberration test using a mammalian cultured cell (CHL/IU). However, in the short term treatment process by metabolic activation, it is tended to change the frequency of chromosomal aberrations (following, frequency of aberration) by the Benzo[a]pyrene (0.01mg/ml dosage) which is a positive control substance. The frequency of aberration in 2004 - 2006 in our laboratory was 45.7±20.1% (n= 32), 58.5±16.4% (n= 51), and 79.2±18.5% (n= 57) (respectively average value for every year).
Then, the influence by the treatment (exposure) time by the kind of solvent and the amount, and metabolic activation enzyme S9 and the concentration, the number of cells, etc. was considered for the purpose of the elucidation of the change factor of the frequency of aberration of a Benzo[a]pyrene. Although the kind of solvent and the amount, and the number of cells was small did not influence the result, it turned out that the processing time and concentration by S9 influence greatly. Furthermore, when the change of Benzo[a]pyrene concentration was measured continuous by HPLC about 0.01mg/ml dosage, the half-life was about 20 minutes. Moreover, the half-life of a primary metabolite (presumed an epoxy derivative by LC/MS) was about 6 hours. We presumed that concentration change of most mutagenic derivative influence frequency of aberration.

染色体異常試験におけるベンゾピレンの異常出現頻度の変動要因についての研究

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P119 Collaborative study on the toxicogenomics in JEMS/MMS II : High-throughput qPCR analysis by TaqMan Low Density Array

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After a selection of target genes, quantitative real-time PCR (qPCR) is much more effective way of checking gene expressions than standard DNA microarrays. As a collaborative study of JEMS/MMS, we have studied sets of genotoxic/non-genotoxic hepatocarinogens for gene expression using Affymetrix GeneChip and extracted dozens of candidate genes for screening genotoxic hepatocarcinogens. In the present study we used TaqMan Low Density Array (TLDA) for examining additional 8 chemicals (including 4 genotoxic and 2 non-genotoxic carcinogens) by high-throughput qPCR analysis on the selected 46 genes from the GeneChip analysis. TLDA enabled very simple and rapid analysis on the quantitative gene expression for selected genes. Genotoxic chemicals showed more changes in gene expression which was evident especially for several genes. Those genes are suitable markers for screening genotoxic carcinogens. The evaluation of TLDA will be discussed.

トキシコゲノミクスに関するJEMS/MMS共同研究II：TaqMan Low Density Arrayを用いたハイスループットqPCR法による解析

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