P094 Multi-endpoint genotoxic assay using L5178Y *Tk* +/- -3.7.2c cells

Izumi OGAWA, Satoshi FURUKAWA, Yoshinori TANAKA, Masayoshi ABE, Koji USUDA, Seigo HAYASHI：*Nissan Chemical Industries, Ltd. Biological Research Laboratories*

When the positive result is found in the mouse lymphoma *Tk* assay, it is difficult to clearly distinguish gene mutation from chromosome aberration for the cause of the positive response just by examining colony sizes. In the ordinary mouse lymphoma *Tk* assay, we prolonged the expression time from 2 days to 6 days after treatment and then prepared micro-titer plates for detecting the *Hgprt* and *Tk* mutation simultaneously. Moreover, one or two days after treatment, we prepared the slides for the *in vitro* micronucleus assay to evaluate the clastogenic potential. We assayed caffeine, non-carcinogen which has no potential of gene mutation but chromosome aberration, and ethyl methanesulfonate (EMS), genotoxic carcinogen. Caffeine increased the number of large colonies significantly as well as small colonies in the ordinary mouse lymphoma *Tk* assay although the ratio of small colony number was higher than that in the negative control. However, at 6 days after treatment, it turned out to be the complete negative result on the gene mutation test both for *Hgprt* and *Tk*. Meanwhile, the *in vitro* micronucleus assay resulted in the positive. EMS showed the positive result on the gene mutation tests for both loci at 2 and 6 days of expression and on the *in vitro* micronucleus assay. In conclusion, it is suggested that the genotoxic profile of chemicals can be found out by simultaneous investigation into the potential of gene mutation for *Tk* and *Hgprt*, and of micronucleus induction when the positive response appears in mouse lymphoma *Tk* asaay.

L5178Y (Tk+/- -3.7.2c) 細胞を用いた複数の指標による遺伝毒性試験

小川いづみ，古川賢，田中佳範，阿部正義，臼田浩二，林清吾：日産化学工業(株)生物科学研究所

P095 Polyploidy Induction and Cell Transformation by Asbestos in *In Vitro* Assays

Masumi ASAKURA, Toshiaki SASAKI, Toshie SUGIYAMA, Heihachiro ARITO, Kasuke NAGANO, Shoji FUKUSHIMA：*Japan Bioassay Research Center*

Asbestos is known to cause mesotheliomas in human, but little is known about its carcinogenic mechanism. The present study was intended to explore any causative factor for asbestos-induced carcinogenesis, using three different in vitro assays.
Chrysotile A of UICC as asbestos was tested in the chromosomal aberration assay with Chinese hamster lung cells (CHL/IU), the micronucleus assay with CHL/IU and the 2-stage cell transformation assay with BALB/3T3 cells.
Chrysotile induced polyploidy but not structural chromosome abnormality in the chromosomal aberration assay. In the micronucleus assay, the induction rate of micronucleated cells was only about two times higher for chrysotile than for the negative control, but the number of binucleated cells was ten times greater for chrysotile. Treatment with chrysotile followed by TPA produced numerous transformed foci in the cell transformation assay, whereas treatment with 3-MC followed by asbestos did not. Chrysotile was classified as an initiator but not as a promoter in this assay.
The results of these three in vitro assays suggest that chrysotile induces polyploidy by cytokinesis block but not by disturbance of the mitotic apparatus, and forms morphologically transformed foci through its initiating action.

アスベストによる倍数体および形質転換の誘発

浅倉眞澄，佐々木俊明，杉山淑江，有藤平八郎，長野嘉介，福島昭治：日本バイオアッセイ研究センター