

분류번호

S-1

제 목	MEDIUM-TERM LIVER BIOASSAY FOR RAPID DETECTION OF CARCINOGENS
연구자	Ryohei Hasegawa*, Tomoyuki Shirai and Nobuyuki Ito
소 속	Nagoya City Univ. Japan
내 용	<p>The vast number of compounds which have been introduced into our environment in recent years is far beyond our capacity to assess for carcinogenicity using expensive, life-time carcinogenicity studies in rodents. Several <i>in vitro</i> short term assays which are very rapid and inexpensive have therefore been applied as mass screening methods. However, increasing evidence has indicated that mutagenicity results do not always correlate with long-term carcinogenicity. Therefore, the existence of discrepancies dictates the necessity of suitable <i>in vivo</i> rapid assay systems which could bridge the gap between mutagenicity and conventional long-term testing.</p> <p>In our laboratory, a medium-term liver bioassay system in male F344 rats utilizing glutathione S-transferase placental form (GST-P) positive hepatic foci as endpoint markers has been established. The system consists of a single injection of diethylnitrosamine (DEN, 200 mg/kg, 1p) followed by 6 weeks administration of test compound starting 2 weeks later in conjunction with 2/3 partial hepatectomy at week 3. So far more than 200 chemicals have been tested. More than 97% of the genotoxic liver carcinogens and 86 % of the non-genotoxic liver carcinogens gave positive results. False-negative results were noted with 4,4'-diaminodiphenylmethane, a hepatotoxic agent, and peroxisome proliferator hepatocarcinogens. Two of 40 compounds reported as noncarcinogenic demonstrated positivity, which may be hepatopromoting agents. Carcinogens other than established hepatocarcinogens, however, gave less positive rates (25 %).</p> <p>The present medium-term bioassay has been established as practical tool for rapid detection of carcinogenic agents and can offer valuable information for risk assessment.</p>