P-025 (O-2)

Difference between child-adult in evaluation of in vivo genotoxicity of acrylamide

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The recent discovery of acrylamide (AA), a potent carcinogen in the frying or baking of variety of foods, raises human health concerns, in particular, for children, because AA is relatively highly contained in snacks, cereals, and baby foods. AA is known to be metabolized by CYP2E1 to glycidamide (GA) which is responsible for genotoxicity and carcinogenicity. The activity of CYP2E1 varies during postnatal development implying that the genotoxic and carcinogenic risk of AA may be different between children and adults. To elucidate the difference genotoxicity of AA to children and adult animals, we treated young or adult male rats (gpr-gentra delta F344 rats 3w, 11w or SD rats 3w, 11w) with 20-80 ppm or 50-200 ppm of AA in drinking water for 28days, and examined the genotoxicity in the blood, liver, testis. We also analyzed DNA adducts (N7-GA-Gua) derived from GA in the liver, testis, mammary gland and thyroid gland. The genotoxicity of AA in peripheral blood and liver were not severe in these experiments, and did not observe significant difference between the young and adult rats. In contrast, AA caused significant genotoxicity in tests of young rats and it corresponded to the adduct level. We may be more concerned about germinal mutagenicity and reproductive toxicity of children exposed to AA through ordinary foods.

P-026

Confirmation of DNA damage by DAB (para-Dimethylaminoazobenzene) which can induce micronuclei in hepatocytes in vivo

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DAB is known to be a rat liver carcinogen (IARC, 2B), and it also induces micronuclei in hepatocytes in young rats. We conducted the following test as a part of our investigation of the relationship between micronucleus induction and DNA damage. Young rats were administered 37.5, 75 and 150 mg/kg of DAB once a day for 2 days. Three hours after the final dosage, DNA damage in liver and bone marrow was examined using % tail DNA and Olive tail moment by the comet assay as indicators. Concurrently, bone marrow smear specimens were prepared, and the micronucleated immature erythrocyte ratio was calculated by counting 2000 immature erythrocytes. Based on these results, liver and bone marrow micronucleus or DNA damage inducibility at each DAB dosage was compared and discussed. The relationship with hepatocarcinogenicity is also discussed.

肝小核誘発物質 DAB (para-ジメチルアミノアゾベンゼン) によるDNA損傷性の確認

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DAB は、ラット肝がん誘発物質(IARC, 2B)であり幼若ラットに肝に核を誘発することが知られている。核誘発とDNA損傷性の関連性を調べる一環として以下の実験を実施した。幼若ラットにDAB の37.5, 75 及び150 mg/kgを1日1回2回経口与えた。最終投与2時間後に肝と骨髄細胞のDNA損傷をコメットアセイ法により%tail DNA, Olive tail momentを指標として調べた。同時に、骨髄細胞を回収しスメア標本を作製し2000個の幼若赤血球中の核出現頻度を調べた。DAB の各用量での肝あるいは骨髄核誘発性(染色体異常)とDNA損傷性を比較検討した結果について報告する。また、肝がん性との関連性について考察する。