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6.025

EXPOSURE TO POLYCYCLIC AROMATIC HYDROCARBONS (PAH) IN ITALIAN TOWNS.

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Mean daily exposure to PAHs in Italian towns was evaluated by two sampling campaigns(526 samples of airborne particles collected in 15 different sites)carried out in Genova and La Spezia.This study permitted to evaluate seasonal variation of PAH concentration in the Mediterranean area, their photodegradation rate induced by sunlight,the identification of main sources of these compounds. Traffic resulted to be the main source of these pollutants whose diffusion ,inside urban areas,was estimated.
The decisive role of traffic in individual PAH intake by air inhalation was confirmed by other 78 samples collected along main streets of 19 Italian towns and first indications about distribution of PAH concentration in the Italian urban areas were obtained. Our study suggested that the present PAH exposure in industrial areas and along busy streets is comparable with that occurring during heavy episodes of passive smoking.

6.026

DNA-ADDUCTS OF THE MUTAGEN 2-BROMOACROLEIN.

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DNA-adduct formation was studied by the mutagen 2-bromoacrolein (2BA), a mutagenic metabolite of the flame retardant tris-(2,3-dibromopropyl)phosphate (TRIS-BP) and the nematocide 2,3-dibromo-chloropropane (DBCP).

Besides cyclic deoxyguanosine adducts (J.Org. Chem. 53, 30-35, 1988) an unstable 3-(2-bromo-3-oxo-propyl)-thymidine adduct was formed. This was stabilized by conversion to a stable oxime derivative and by this method, its formation in DNA in vitro was demonstrated.

The formation of unstable, reactive thymidine adducts from 2BA may be responsible for the observed clastogenicity of TRIS-BP in rats and DNA-crosslinking in Drosophila.

Replication of M13 ssDNA, modified with 2BA, was severely inhibited compared to control M13. Analysis of the replication products by gel electrophoresis indicated that formation of deoxyguanosine or thymidine adducts was not responsible for this but that, most likely, cytidine adducts represented the blocking lesions.

6.027

LUNG CANCER INCIDENCE AND MORTALITY AMONG GENOA RESIDENTS:EFFECT OF MIGRATION RELATED PARAMETERS

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The potential effects of migration related parameters (i.c. place of birth, lenght of residence, age at migration) on lung cancer incidence and mortality were investigated among Genoa residents. The town of Genoa is among the geographical areas with the highest incidence and mortality from lung cancer. The migration from other parts of Italy has been consistent between the early century until the mid 1970s. The association between lung cancer risk and the above cited parameters have been investigated by Poisson regression analysis for two sets of data: 983 incident cases (1986-1987) and 1703 lung cancer deaths (1984-1987). Both standardised incidence (SIR) and standardised mortality (SMR) ratios estimated suggested a significant positive association between lung cancer risk and lung cancer mortality of the area of birth. SIR showed an association between duration of residence and lung cancer risk : the longer the period of residence the higher the risk of lung cancer occurence.This relationship was particularly evident among subjects who migrated to Genova from areas charaterised by a low lung cancer mortality.

6.028

DRINKING WATER GENOTOXICITY AND ITS POSSIBLE ROLE IN THE ETIOLOGY OF OESOPHAGEAL CANCER IN THE CASPIAN LITTORAL OF IRAN; MAZANDARAN PROVINCE. A.-A. ZIA'EE AND F. RASTGAR. INST. BIOCHEM. AND BIOPHYS. TEHRAN UNIV.,TEHRAN, IRAN.POB 14155-6461. Fifty one villages and towns among about 1200 places were statistically selected for sampling of 100 lits of consumed drinking water. The sources of the collected water were, wells canals, rivers and rain-water collected in underground stores. The samples were run through XAD-2 column, eluted with acetone/methannol and the dried chemicals were dissolved in DMSO for genotoxicity estimation. Extracts of water from rivers and underground stored water caused a high increase in TA98 revertants without of S9 mixture, while TA100 were not affected. Only 1/4 of the total sampled wells caused elevation in TA98 reversion; twice of the controls. Those extracts induced high frequency in TA98 revertants, also highly elevated DNA alkaline labile sites in V79 fibroblasts. Such high mutagenicity and DNA damaging effects must be considered for risk estimation of Oesophageal cancer etiology in such area showing one of the highest incidence rate in the world.
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6.029

TUMOR PROMOTERS INHIBIT GJIC IN CULTURED ENDOTHELIAL CELLS.

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Blockage of gap-junctional intercellular communication (GJIC) has been involved as an important determinant in tumor promotion. Many tumor promoters proved to down-regulate gap-junctional function in a variety of eukariotic cell lines and strains. The effect of the tumor-promoters 12-O-tetradecanoylphorbol-13-acetate (TPA), phorbol-12,13-diacetate (PDA), phenobarbital (PB), dichlorodiphenyltrichloroethane (DDT) and the non-promoters phorbol (PHR) and 4α-phorbol-12,13-didecanoate (4α-PDD) was here evaluated by the Lucifer Yellow microinjection GJIC assay in cultured endothelial cells (EC). Transformed foetal bovine aortic EC GM7373, endowed with high basal GJIC capacity, were used in this study. At non-cytotoxic, mitogenic concentrations, all the promoters tested induced a time- and dose-related inhibition of EC-GJIC. The effect was maximal (90%) after a 24h treatment with 100ng/ml TPA, lower but significative (30-40%) after a 24h treatment with 100ng/ml PDA or after a 4h incubation with 10uM PB or DDT; in these two latter cases GJIC was partially recovered within 24h. A 24h treatment with 100ng/ml PHR or 4α-PDD was uneffective on EC-GJIC. Our findings demonstrate that GM7373 is a promoter-sensitive system; they also provide additional evidence that promotion involves the inhibition of GJIC and that GJIC evaluation may represent an useful in vitro short-term test for detecting tumor-promoting activity of environmental and occupational chemicals.