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QUANTITATIVE STUDY ON KUPFFER-CELL DISTRIBUTION DURING CHEMICAL HEPATOCARCINOGENESIS IN RATS

L.Jánossy, A.Zalatnay and K.Lapis

First Institute of Pathology and Experimental Cancer Research, Semmelweis Medical University, Budapest, Hungary.

Little is known about the role of Kupffer-cells and effect of transformed cells on the RES elements during the course of experimental hepatocarcinogenesis. We successfully induced foci, nodules and carcinomas in the liver of F-344 male rats according to Solt and Farber. No Kupffer-cell sarcoma occurred. To identify Kupffer-cells carageenan was given i.p. (toluidine blue metachromasy) or ferrum gluconicum per os (Prussian blue). There were significant morphometric differences in the distribution of Kupffer-cells. More Kupffer-cells were found in the non-transformed part of treated than in intact liver, but there was a strongly decreasing number of them around the foci and especially inside the foci. Nearly no Kupffer-cells were present in the hepatocellular carcinomas and only few were found around them. Around the foci there was a rather small macrophage inhibitory zone, while around the hepatocellular carcinomas there was a huge macrophage inhibitory zone with nearly no Kupffer-cells. These findings suggest the presence of special hypothetic factors secreted by transformed cells against Kupffer-cells.

JUH

AN EPIDEMIOLOGICAL STUDY OF STOMACH CANCER IN THE COUNTY SZABOLCS-SZATMÁR, HUNGARY

Lajos Juhász, Géza Nagy and András Vass

Cancer Registry of the County Szabolcs-Szatmár, County Hygiene Laboratory, County Laboratory of Plant Protection and Agrochemistry, Nyíregyháza, Hungary.

Stomach cancer is a common malignant tumour in Hungary. Therefore, an epidemiology study was established in the County Szabolcs-Szatmár in North East Hungary in order to evaluate the possible factors which may contribute to the high incidence of this tumour. Firstly, the incidence was determined in all 230 localities in this region. In 60% of the localities there was a high incidence of more than 20 per 100,000 per year and in 62% of the localities, high levels of nitrate in drinking water (>100 mg/litre) were detected. This finding correlated with nitrate levels in urine. Thus, elevated nitrate levels may contribute to the increased incidence of stomach cancer although other factors were evaluated, including an analysis of major soil types in the region. A soil type (designated cast + clay) was found in 58.7% of the localities and this type predominated in areas bordering the rivers. Data on the content of important trace elements in the soil types was collected. Mg and Zn levels showed a good correlation with a high incidence of stomach cancer, high nitrate in drinking water and the presence of the cast + clay soil type although there were no correlations with Cu and Mn levels.

KAD

ASSESSMENT OF GENOTOXICITY IN HUMANS EXPOSED TO CARCINOGENIC AROMATIC AMINES AND NITROPOLYCYLIC AROMATIC HYDROCARBONS

Fred F.Kadlubar

National Center for Toxicological Research, Jefferson, Arkansas 72079, U.S.A.

The potential occurrence of carcinogenic aromatic amines and/or nitropolycyclic hydrocarbons in the workplace, cigarette smoke, synthetic fuels, diesel exhaust, airborne particulates, and cooked foods presents an important problem for human risk assessment. Two approaches that we are developing in collaboration with other investigators involve: a) determination of metabolic parameters related to individual susceptibility; and b) estimation of carcinogen adducts in protein and DNA as an indicator of exposure levels. The former involves an evaluation of genotypic or phenotypic determinants such as slow/fast N-acetyltransferase status, differences in monooxygenase capacity catalyzing N-oxidation, as well as pharmacodynamic variables such as urine pH and composition, frequency of urination, and detoxification/excretion. Methods for estimation of arylamine-macromolecular adducts include determination of arylamine binding to blood proteins and arylamine-DNA adduct levels in tissue biopsies using specific monoclonal and polyclonal antibodies, ^{32}P post-labelling procedures, and high pressure liquid chromatography.
