microsome assay to determine the mutagenic potential of the area. Support: CIAMB/PADCT/FINEP;CNPq;FAPERGS

P2-19 Effect of cadmium chloride on the gene expression of several enzymes in the testes and livers of rats

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Male Sprague Dawley rats were treated with cadmium chloride (Cd; 20 μmol/kg, s.c), which is known to suppress the testicular reproductive function and the hepatic cytochrome P450 (P450) content in rats, and the effects of Cd on the gene expressions of HMGCoA reductase, lanosterol 14α-demethylase, CYP11, CYP17, 3β-HSD responsible for cholestrol/ testosterone biosynthesis, metallothioneins (MT-1 and MT-2) and P450 isoforms (CYP2B1, CYP2B2, CYP3A1, CYP3A2 and CYP1B1) in the testis and/or liver were examined by RT-PCR with the corresponding primer sets. Cd-treatment resulted in significant decrease in the tissue weight 24 hr later. The gene expression of all tested enzymes for cholesterol/testosterone biosynthesis were significantly suppressed 48 hr after Cd-treatment. In the testis, MT-2-selective induction, but not MT-1, was ohserved 48 hr after Cd-treatment, while in the liver gene expressions of MT-1 and MT-2 were decreased 24 hr later. Testicular gene expression of CY2B1 and CYP1B1 was significantly decreased 48 hr later, whereas the CYP3A1 gene expression was enhaneed. In the liver, gene expression of CYP2B1 and CYP2B2 was also suppressed 48 hr after Cd-treatment, whereas hepatic gene expressions of CYP1B1 and CYP3A1/2, in contrast to the testis, were enhanced and suppressed, respectively, 48 hr later. The present findings suggest that Cd-mediated impairment of testicular reproductive function might be dependent on a decrease in the enzymes responsible for cholesterol/testosterone hiosynthesis and further indicate that there is significant difference in Cd-mediated alteration of the gene expression of MTs and P450s between the testis and the liver.

P2-20 Transforming and tumorigenic potential of tetrachloroethylene in BALB/c-3T3 cells

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Exposure to tetrachloroethylene (TCE) occurs in a number of occupational settings such as during dry-cleaning and metal degreasing. Phenotypic and genotypic changes during carcinogenesis may be demonstrated by the cell transformation and tumorigenesis assays and by molecular analyses. To study the carcinogenic potential of TCE, BALB/c-3T3 cells were exposed to TCE at varying concentrations for 24 hours. Further, nude mice were injected with TCE-transformed cells. TCE caused a significant increase in transformation frequency in a dose dependent manner. Also, the cytotoxicity data indicated a dose-dependent decrease in the cell number after TCE treatment. All the mice injected with transformed cells developed tumors indicating the tumorigenic potential of TCE. DNA from transformed cells were subjected to differential PCR to detect changes in gene copy number and gene expression of six proto-oncogenes (K-*ras, c-fos, c-jun,c-myc, c-sis, erb-B2*) and two tumor suppressor genes (*p53, p16*). While none of the transformed cells showed changes in gene amplification, altered gene expression was observed in *c-jun, c-sis* and *p16*. These results indicate that TCE is capable of inducing cellular and molecular changes in BALB/c-3T3 cells and that these cells then possess neoplastic potential. Further studies are in progress to investigate the epigenetic mechanism(s) of TCE-induced cell transformation and tumorigenesis.

P2-21 Genotoxic monitoring of Caí-river water under the influence of petroquimical industrial complexes and urban discharges in the Drosophila wing-spot test

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Industrial and urban wastewaters represent an important source of genotoxins imposing a severe impact on aquatic ecosystems. The Caí river (RS, Brazil) is located at the area under influence of the Petroquimical Complex of Rio Grande do Sul State, and receives large amounts of untreated municipal discharges in its lower course. In the present study we employed the SMART wing test in *Drosophila melanogaster* to evaluate the genotoxicity of surface waters collected from Caí sites receiving direct sewage discharge: one from Montenegro (Km 52) and two from São Sebastião do Caí (Km78 and 80), and two sites under the influence of this Complex (Km 13,6 and 18,6). The monitoring included three collections: March, June and September 1999. Samples were tested at full strength and at 50% and 25% concentrations. It was observed negative results for all industrial sites in the three collections. However, the sites under influence of untreated municipal discharges have showed significant increments related to mutations and/or recombination: Km52, 78 and 80 samples collected in march, and Km 52 collected in Septemher. The results presented indicate that the genotoxic inputs into the lower course of the Caí river are no industrial in origin.

P2-22 Genotoxic effects in Glaucous gulls

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Glaucous gull (Larus hyperboreus) which is one of the top-predators in the arctic marine ecosystem, has at Svalbard very high concentrations of polychlorinated biphenyls (PCBs). Previous studies suggest that PCBs have a genotoxic effect in birds. Material for analysis was taken from juvenile gulls of the same age reared from eggs collected in Isfjorden and Kongsfjorden. The chicks were divided into two groups, one was the "clean" (control) and one was supposed to be polluted through the food. All the chicks had a basic diet consisting of polar cod, water and vitamins. The "polluted" group was also fed with eggs of gulls. Seabirds and seabird eggs are suggested to be one of the most polluted ingredients in the diet of glaucous gull. To ensure a diet as equal as possible, the "clean" group had hen eggs when the other group had gull eggs. The sampling of the birds took place in August 1999. Samples were taken of a total of 39 individuals, 19 birds in the control and 20 in the persistent organic pollutant (POP) exposed group. For the analysis of chromosome aberrations, purified and metaphase enriched peripherial blood lymphocyte and bone marrow spreads were used. DNA adduct analysis was carried out of liver tissue, which was frozen down immediately after killing. The results from the genotoxic analysis of the two groups of gulls will be compared and discussed.Financial support was obtained from Effects Programme administered by Norwegian Polar Institute. Project no (NP) 4185.

P2-23 Biomonitoring of aquatic environment by micronucleus test and comet assay using gold fish

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There are a variety of mutagens and/or carcinogens in aquatic environment such as river, lake and seashore. The micronucleus test and the single cell gel electrophoresis (comet) assay have been used for genotoxic evaluation of