P13-08
GENE EXPRESSION MODULATION IN THE LIVER OF MICE FOLLOWING ACUTE OR CHRONICAL EXPOSURE TO ARSENIC

B. Casati, A. Collotta, L. Clerici, E. Marafante

Physical and Chemical Exposure Unit, IHCP, Joint Research Centre, 21020 Ispra, Italy

DNA macroarrays was applied to evaluate gene expression response in the liver of mice exposed to a single acute dose of arsenic or chronically exposed to arsenate in drinking water.

Adult male mice were exposed to sodium arsenate in drinking water (1 mg As/l) for 4 months and the modulation of gene expression in the liver compared to that induced by exposure to a single acute dose at 4 and 24 h after treatment.

After 4-month of exposure to arsenate significant up modulated genes were found, mostly belonging to families of metabolism, DNA-synthesis and repair, protein turnover, receptors, transcription and post translation modification.

At 24 h following the exposure of the acute dose, some of these genes were already up-modulated while at 4 h after treatment only down modulated genes were see.

Major differences between the acute and chronic doses were observed in the down-modulated genes at 4 and 24 h following the acute dose, involving gene families of extra-cellular transport, metabolism and protein turnover.

These results suggest that the length of exposure affects the biological response to arsenic exposure and the modulation of specific gene expression.

P13-09
EVALUATION OF CADMIUM CHLORIDE EFFECTS ON MOUSE SPERMATOGENESIS BY FLOW CYTOMETRY

H. Oliveira, L. Filipe, J. Loureiro, C. Santos, M.L. Pereira

Department of Biology, University of Aveiro, 3810 Aveiro, Portugal

Cadmium is a well known testicular toxicant and several studies on testis histology are available. However, as far as we know, quantification of testicular cell ratios was not yet performed. The aim of the present work was to quantify the different testicular cell types in mice after a cadmium chloride exposure, by flow cytometry using paraffin embedded material.

Seven weeks old male mice were subcutaneously injected with 1, 2 or 3 mg of $CdCl_2$/kg body weight. Control animals were injected with saline. After 24 h animals were sacrificed and testis were removed, fixed in neutral 10% buffered formalin and embedded in paraffin. Sections were deparaffinized, rehydrated and digested with pepsin. The nuclear suspension was incubated with RNAse and PI and analysed by flow cytometry.

Cadmium chloride (particularly the dose of 3 mg of $CdCl_2$) induced significant changes in number and ratios of testicular cells. A decrease in the number of haploid (1C) cells and an increase in diploid (2C), S phase and tetraploid (4C) cells was also observed.

These changes may be due to the effects of $CdCl_2$ on both blood testis barrier and vascular endothelium. Cadmium disrupts inter Sertoli tight junctions and alters Sertoli-germ cell adhesion with consequent exfoliation of spermatids within the seminiferous tubules. On the other hand a decrease in blood supply to germ cells leads to testicular necrosis.

The results obtained by FCM are in accordance with the histopathological evaluation. The use of embedded material for FCM analysis allows long time storage and the possibility of making some replicas, which increase the reliability of the results.

P13-10
PLASMA METALLOTHIONEIN LEVELS IN LEAD POISONED CHILD

R. Prusa, O. Blastik, J. Kukacka, R. Kizek, H. Stuchlikova

[1]*Department of Clinical Biochemistry and Pathobiochemistry, 2nd Faculty of Medicine Charles University, V Uvalu 84, 150 06 Praha 5, Czech Republic*; [2]*Department of Chemistry and Biochemistry, Mendel University of Agriculture and Forestry, Zemedelska 1, 611 37 Brno, Czech Republic*

A 11-year-old girl was referred to the hospital by her general practitioner because of abdominal pain, vomiting, dark colour of tongue, low intake of fluid and food, and abnormal laboratory results (bilirubin 55 μmol/l,

ast 2.94 μkat/l, alt 3.46 μkat/l, haemoglobin 86 g/l). Blood film exhibited basophilic stippling, prompting for investigation of lead poisoning. Blood lead levels were measured by automated graphite furnace aas (varian). Plasma metallothionein levels were measured by electroanalytical technique—voltametric Brdicka reaction. In time of admission, the blood lead was 648 μg/l, and metallothionein 153 μmol/l (normal values below 10 μmol/l). Chelation therapy by EDTA was administred for five consecutive days. During the course of therapy the b-Pb decreased to 360 μg/l, u-Pb increased to 6019 μg/24 h, *p*-metallothionein increased to 276 μmol/l. After 5 days of chelation treatment, the b-Pb increased (535 μg/l), *p*-metallothionen decreased (147 μmol/l). The source of 6 months lead exposure was identified as tea from a ceramic tea pot with insufficient glazing (lead concentration in tea after 30 min was 45332 μg/l). Both this child's mother and grandparents were also poisoned by lead. In conclusion, there is need to be aware of lead exposure risk from commonly used materials.

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P13-11
PRO-INFLAMMATORY CHANGES FOUNDED IN AORTIC WALL OF CADMIUM TREATED RATS

V. Mlynek[1], M. Rzeszutko[2], A. Skoczynska[1]

[1]*Department of Internal Medicine, Medical University of Wroclaw, Poland*; [2]*Department of Pathological Anatomy, Medical University of Wroclaw, Poland*

The histopathological changes caused by cadmium in blood vessels wall were determined. Male Buffalo rats were treated by solution of cadmium chloride in concentration of 50 ppm ($n = 12$), 5 ppm ($n = 12$) and distillated water ($n = 12$). After three months, in the deep anesthesia, the thoracic aortas were prepared. Mean blood cadmium level in poisoned rats (36.5 ± 3.6 μg/l and 2.95 ± 1.07 μg/l, respectively, in animals given 50 ppm or 5 ppm of metal) was significantly higher ($p < 0.001$) than in controls (0.016 ± 0.01 μg/l).

Mean thickness of aortic wall in the rats treated with 50 ppm of cadmium was significantly higher in comparison to controls (646 ± 85 μm versus 498 ± 86.2 μm; $p < 0.01$) and aortic wall was asymmetric. Histopathological changes were observed especially in rats treated with cadmium in a dose of 5 ppm. There were lymphocytes linked to endothelium, subendothelial infiltration of lymphocytes, lack of the endothelium and different endothelium thickness. Moreover, aortas of these rats displayed excavations which formed pseudocrypts. Collagen fibers distribution was nonparallel and irregular. Also lymphocytic infiltration in the periaortic soft tissue was founded more often in rats treated with cadmium in a dose of 5 ppm.

It was concluded that proinflammatory effect of cadmium in vessels wall was dose-dependent and it was more evident in rats poisoned with cadmium in the smaller dose.

P13-12
HOMEOPATHIC MEDICATION AS MERCURY'S CHELATING AGENT

L.A. Beringhs-Bueno[1], A.E. Paschalicchio[2]

[1]*Brazilian Institute Louis Blanc of Studies and Research, São Paulo, Brazil*; [2]*Health Institute, São Paulo State Heath Department, Epidemiological Division, São Paulo, Brazil*

Mercury (Hg) is one of the toxic metals presenting the most environmental and occupational hazards. For many years specialists have been searching for ways of reducing heavy metal toxicity in vivo by using chelating agents or other competing substances. Another effective method is the use of ultradiluted quantities of the toxic metals themselves, either in pre or post-treatment of poisoning. Homeopathy can control metal poisoning levels in human beings. This paper evaluates the results of homeopathic medication in the treatment of Hg-contaminated patients. Clinical and laboratory data on 52 patients with a history of occupational exposure to mercury were collected. The patients were randomly selected and blindly distributed into two different groups: placebo and *Mercurius solubilis* (7 CH and 12 CH). The choice of homeopathic medication was based on the principle of similitude to the toxic metal. Those patients had been submitted to the Hg blood, urine and in the hair analyses before the beginning of the treatment, in 30 and 60 days. By the end of the treatment it had a significant Hg hair level reduction in those individuals treated with homeopathic medication, beyond the presence of indications of the increase Hg urinary elimination. Mercury symptoms had also