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Alterations on biological systems caused by *in vivo* PCB126 inhalation exposure in rats

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Polychlorinated biphenyls (PCBs) are persistent organic pollutants and ubiquitous environmental contaminants that resist to degradation and accumulate in the food-chain. PCB126 was widely used in industrial processes and is the most potent aryl hydrocarbon receptor agonist and the most toxic PCB in this group. Since respiratory tract is an important inlet pathway of environmental pollutant exposure, this work aimed to investigate the systemic effects caused by PCB126 inhalation in rats. Male Wistar rats were exposed to PCB126 0.1; 1 or 10 µg/kg for 15 consecutive days by nasal instillation. Control animals were exposed to vehicle (saline + 0.5% DMSO). Five hours following the last exposure, animals were killed and circulating blood, serum and bone marrow cells were collected. The number of total circulating and bone marrow cells were evaluated in Neubauer chamber and differential circulating leukocytes count was performed in stained smears. The expression of L-selectin, β2-integrin and PECAM-1 on circulating leukocytes membranes was evaluated by flow cytometry. In serum samples, the biochemical, lipid and cytokine profiles were conducted. In addition, another group of exposed animals was submitted to an intravenous glucose tolerance test. All the experiments were conducted according to Ethics Committee in Animal Experiments approved by protocol number CEUA/FCF/315. PCB126 at 1 and 10 µg/kg caused gain of animal's body weight at the end of 15 days of exposure. This increment is evidenced not only at the end of the exposure but since the first day of *in vivo* exposure. In addition, 10 µg/kg of PCB126 reduced the number of total circulating and bone marrow cells. In the blood, this reduction was due to a low lymphocyte count. Furthermore, the expression of L-selectin was markedly reduced at basal conditions in neutrophils, lymphocytes and monocytes after PCB126 exposure. Moreover, *in vitro* fMLP (N-formyl-methionine-leucine-phenylalanine) stimulation impaired β2-integrin and PECAM-1 expression in the cells obtained from exposed animals. No alterations were observed on concentrations of TNF-α, IL-1β, IL-6, hemoglobin and glucose in serum. The intravenous glucose challenge test was not modified. Data obtained show that PCB126 inhalation alters body weight, the lymphocyte circulation in the blood and the adhesion molecules expression on peripheral leukocytes. The two latter effects affect the host defense, as lymphocytes are pivotal cells in the immune response. Financial Support: FAPESP (Process nº11/09677-8).