Health Aspects of Pesticides - Dec, '72

72-2592. Benthe, H. F.; Knop, J.; Schmoldt, A. (Pharmakol. Inst. der Univ. Hamburg, Hamburg, Germany). Aufnahme und Verteilung nach Inhalation polychlorierter Biphenyle (PCB). [Absorption and distribution of polychlorinated biphenyls (PCBs) administered by inhalation.] *Arch. Toxikol. 29(2): 85-95; 1972.* (18 references)

In male rats, after a single aerosol exposure to a PCB mixture of low chlorinated biphenyls (Pydraul A 200, Monsanto) absorption and distribution were studied by measurements of PCB concentration in different organs. With this method of inhalatory application, a definitive absorption is shown. Depending on duration of PCB exposure, a rapid increase of PCB concentration in liver was observed; the concentration after 15 min was already more than 50% of the maximum concentration attained after nearly 2 hr (70 μg/g tissue). Concentration in fat after 30 min of exposure was 14 μg/g tissue (about 27% of liver concentration). In brain tissue only 9 μg PCB/g tissue (= 17% of liver concentration) was found at this time. Depending on the amount of time lapsed after the aerosol application, a rapid increase in PCB concentration in liver over 24 hr, accompanied by an increase in levels in brain and fat, was measured. In the course of 2 days brain and liver concentration fell to a minimum value, whereas in fat a maximum was reached (260 μg/g tissue) which remained constant afterward. There was no toxic fatty degeneration of liver under these experimental conditions. Explanation of PCB accumulation in liver and distribution from organ to fat is discussed. (Author abstract by permission)

72-2593. Benthe, H. F.; Schmoldt, A.; Schmidt, H. (Pharmakol. Inst. der Univ. Hamburg, Hamburg, Germany). Induktion mikrosomaler Leberenzyme nach einmaliger Gabe von polychlorierten Biphenylen (PCB) und anschliessender Stress-Situation. [Induction of hepatic microsomal enzymes following a single oral dose of polychlorinated biphenyls (PCBs) and a subsequent stress situation.] *Arch. Toxikol. 29(2): 97-106; 1972.* (20 references) (German)

One i.p. injection of PCBs induces a high stimulation of rat liver microsomal drug oxidizing enzymes; equimolar doses of tetrachlorobiphenyls are distinctly more effective than dichlorobiphenyls. The effect can still be demonstrated distinctly four weeks after application. During this time the liver concentration of tetrachlorobiphenyls decreased to 7 μg/g tissue whereas the concentration of adipose tissue rose to 252 μg/g. By stress tetrachlorobiphenyls are mobilized along with fat, causing an increase of liver concentration to 32 μg/g. Simultaneously, a new stimulation of microsomal activity can be seen, nearly equal to the maximum stimulation four days after i.p. application of 500 mg/kg b.w. Parallel to microsomal stimulation, there is an increase in relative liver weight. Stress induced activation of microsomal activity caused by PCB redistribution is important for the evaluation of PCBs in environmental toxicology, in view of rising PCB concentrations in human adipose tissue. (Author abstract by permission)

72-2594. Domschke, S.; Domschke, W. (Medizinische Klinik mit Poliklinik der Univ. Erlangen-Nuernberg, Erlangen-Nuernberg, Germany). Der Einfluss von Alkylphosphaten auf die Nettoproduktion von Glucose und Harnstoff in der isoliert perfundierten Rattenleber. [The influence of alkyl phosphates on the net production of glucose and urea in the isolated perfused rat liver.] *Arch. Toxikol. 29(2): 143-151; 1972.* (31 references) (German)

Subsequent to the s.c. application of soman (0.05 mg/kg) and diisopropylfluorophosphate (DFP) (1.0 mg/kg), respectively to Wistar rats, the liver content of ATP is decreased within 1 hr to 50% as compared to controls. The fall in ATP levels results in reduction of gluconeogenesis and urea production in alkylphosphate damaged liver. Simultaneously, an increase both of lactate/pyruvate and of β-hydroxy-butyrate/acetoacetate ratios can be observed exceeding normal values about 2- to 3-fold and thus indicating a more reduced state in cytoplasmic as well as in mitochondrial pyridine nucleotides. This change in the redox state of liver cells might be due to decreased utilization of reduction equivalents for biosynthetic processes, and to hypoxia. As metabolic effects communicated in the present study are not obvious in rats pretreated with atropine, alkylphosphate action on liver is apparently indirect and might be explained in terms of hypoxia and ischemia developed as a result of the accumulation of acetylcholine. (Author abstract by permission)

72-2595. Reiner, R. (Battelle-Inst. e. V., Frankfurt am Main, Germany). Beziehung zwischen chemischer Struktur und Cholinesterase-reaktivierender Wirkung bei einer Reihe neuer unsymmetrischer Pyridiniumsalze. Teil III: Regressionsanalytische Berechnungen zur Vorhersage der biologischen Aktivitaet und zur vergleichenden Konformationsanalyse. [Relationship between chemical structure and cholinesterase-reactivating effect in a number of new asymmetric bis-quaternary pyridinium salts. Part III. Regression analysis calculation for predicting the biological activity and for comparative conformational analysis.] *Arzneim.-Forsch. 21(12): 2032-2033, 1971.* (8 references) (German)

Assessment of the relationship between biological activity and chemical structure using regression analysis is based on the assumption that the degree and mode of action of a drug are determined by the sum of the action parameters of the substituents contained in the molecule and the basic skeleton. An analysis of this type was developed for a series of previously synthesized bis-pyridinium aldoximes and the results compared with the observed cholinesterase reactivating efficacy and inherent inhibition. Calculated and actual results were in

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