Effect on tissue vitamin A levels in the rat following subchronic exposure to 3,3',4,4',5- and 2,3',4,4',5-pentachlorobiphenyl (i.e. PCB 126 and PCB 118)

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Introduction. A good correlation exists between the toxic potency and reduction in hepatic vitamin A of rats exposed to individual PCDD and PCDF congeners[1]. Since many PCB congeners are structurally related to PCDDs and PCDFs, it is of interest to investigate if such a correlation also exists for PCB congeners. As part of a general program on PCB toxicity, the present study was carried out to investigate the effect on vitamin A in rats exposed to PCB 126 and PCB 118.
Experimental design. PCB 126 was administered to rats of both sexes at concentrations of 0.1, 1.0, 10 or 100 ppb in their diets for 13 weeks. Corresponding doses for PCB 118 were 10, 100, 1000 or 10000 ppb and 2, 20, 200 or 2000 ppb to male and female rats, respectively.
Results. The no adverse effect level for general toxicity of PCB 126 was 1.0 ppb[2], while the corresponding value for PCB 118 was at least 20-100 fold higher[3]. The ED50-values for PCB 126 induced reduction of hepatic vitamin A were calculated to be 27 and 13 ppb, respectively, for male and female rats. A PCB 126 induced increase in renal vitamin A was observed only in high dose animals. PCB 118 had no effect on vitamin A levels in the liver, kidney or lung, neither in male nor in female rats.
Conclusions. Compared to TCDD[1], the hepatic vitamin A reducing potencies of PCB 126 and PCB 118 are about 0.05 and <0.0004 (female) <0.0001 (male), respectively.
References
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3 Chu *et al.,* personal communication.