

## IS31. Cd AND PCBs AS THYROID DISRUPTORS: POSSIBLE MECHANISMS OF THEIR TOXICITY AND INTERACTIONS

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Human and wildlife populations all over the world are exposed to more than 800 endocrine disrupting chemicals, cadmium (Cd) and polychlorinated biphenyls (PCBs) being among them. However, data on Cd and PCBs effects as thyroid disruptors are limited, especially at low level exposure and particularly on the mixture of these ubiquitous pollutants. Thus, we investigated the effect of 28-days oral treatment of rats with six different doses of Cd or PCBs (ranging from 0.3-10 mg Cd/kg b.w. or 0.5-16 mg PCBs/kg b.w.), while nine groups were treated with different dose combinations of Cd and PCBs (1.25, 2.5 or 5 mg Cd/kg b.w./day with 2,4 or 8 mg PCBs/kg b.w./day).

Our results showed that oral treatment of rats with different doses of Cd during 28 days induced dose-dependent decrease of serum triiodothyroxine (T3) while statistically significant reduction of thyroxine (T4) was observed for doses  $\geq 1.5$  mg Cd/kg b.w. revealing that T3 hormone is more sensitive to Cd than T4. This finding suggests that Cd interferes with thyroid function predominantly at extrathyroidal level. PCBs, on the other hand, showed more profound effects on T4 hormone levels presumably as the result of PCBs direct effect on thyroid gland. The results on the effects of co-exposure to Cd and PCBs on T3 and T4 hormones, analyzed using methodology based on the differences in slopes of dose–response curves, indicated synergistic interactions between these two chemicals for the effects on thyroid function, i.e. levels of thyroid hormones in serum.

Further intensive scientific work is needed to improve our understanding of the impacts of thyroid disruptors on human health and thus decrease the rise of thyroid-related diseases and disorders.

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