

**Toxic effects of 2, 2', 3, 5', 6 polychlorinated biphenyls (PCB-95) on startle response of zebrafish larvae**

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Epigenetic factors influence the early neurodevelopment of an organism with long-lasting effects on brain function and behavior. But underlying mechanisms of these factors interactions are not fully elucidated. Polychlorinated biphenyls (PCBs) are ubiquitous anthropogenic pollutants, among them non-dioxin-like (NDL) PCBs are linked to neuropsychological dysfunctions in children. Therefore, present study aimed to investigate the effects of PCB-95, one of the widespread NDL PCB congener on startle response of an organism using zebrafish (*Danio rerio*) larvae as a model. Embryos at 2 cell stage with intact chorions were exposed to different concentrations (0.75, 1, 3, 5 ppm) of PCB-95. Exposure time was 1 day with 7 day incubation period. Each treatment was consisted of four replicates with two controls (egg water and dimethyl sulfoxide). Habituation assay was conducted at day 7 by exposing zebra fish larvae to a visual pattern presented beneath the well plate (a red 'bouncing' disk which runs in a straight line at the rate of 1.50 cm/s at the upper half of the well plate). Images were captured every 6s for 30 minutes. Swimming behavior around the well was quantified based on either the animal's position or its turning behavior. PCB levels within exposed larvae were analyzed using gas chromatography/electron capture detection (GC/ECD). Data were analyzed using PROC GLM in SAS software. Mortality rates increased with PCB exposure and in survivors, morphological deformations increased with increasing PCB concentrations. Enhanced thigmotaxis was observed in the treated group and concentration-dependent pattern also observed for latency to reaction, maximum turn velocity ( $V_{max}$ ), time to reach  $V_{max}$  and escape time. Data of present study can be coupled with molecular techniques to permit or accelerate the determination of the mechanisms behind anxiogenic and attention-disrupting effects of PCB exposure documented in children.

**Keywords:** PCB-95, Neurodevelopment, Startle response