The immunotoxic effects of tributyltin on non-specific biodefense system inrainbow trout (*Oncorhynchus mykiss*)

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The immunotoxic effects of tributyltin (TBT) exposure on the respiratory burst activities of neutrophils in head kidney (HK) and peripheral blood (PBL), and lysozyme activities of plasma were examined in rainbow trout (*Oncorhynchus mykiss*). After fish were exposed to TBT at the concentration of 5, 10 and 20 μg/ L for 5 days, and 5 μg/ L for 14 and 28 days, leukocytes obtained from HK and PBL were evaluated for the active oxygen production by flow cytometry (FCM). The contents (%) of neutrophils population in total leukocytes collected from HK of fish exposed to 20 μg/ L of TBT for 5 days was clearly increased compared with the control group. However, respiratory burst activity of neutrophils in the exposure group decreased compared with the control group. The increase of neutrophils from fish exposed to 5 μg/ L of TBT for relatively long term exposure (14 and 28 days) was observed only in PBL. These results indicate that high level exposure of TBT stimulated immune function of rainbow trout temporally, and neutrophils were actively produced in HK, however neutrophils themselves showed weak productivity of active oxygen. It was observed that lysozyme activities decreased in the group exposed to 10 μg/ L for 5 days, while TBT concentration in blood increased in accordance with the TBT concentration in water ranging from 0 to 10 μg/ L. We supposed that immunotoxic effects of TBT were apparent both as immunostimulative and immunosupressive, and these immune responses might be dependent on the TBT concentration of exposure.