The acute effects of water soluble-fraction crude oil on liver tissue of beluga (*Huso huso* Linnaeus, 1754) fingerlings in the Caspian Sea

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Abstract

In this study, the effects of water soluble fraction (WSF) of crude oil on liver tissue of fingerlings beluga (*Huso huso*) with mean weight 10.76 ± 0.23 g was assessed in the Caspian Sea. Firstly, the LC_{50}96h value in water soluble fraction of crude oil was 46.68 mg L^{-1}. Control group and 3 other treatments (at concentrations 0.4LC_{50}, 0.6LC_{50}, and 0.8LC_{50}) were lower than the LC_{50}96h. Each experimental group had 3 replicates including 30 fish and experiment duration was 96h. Physical and chemical factors of water were measured and sampling of liver was done each 24h.

According to the results, different concentrations of water soluble fraction of crude oil (WSF) showed high damages in liver tissue even from the first time of experiment. Several damages such as hypertrophy and congestion of sinusoids, hypertrophy of hepatocyte, vacoulation degeneration and fatty degeneration, bile stagnant, necrosis, cirrhosis and fibrosis were observed in samples. Results showed that in high concentrations of crude oil or more residence of fish in this pollution, unreturnable and serious damages were occurred. Results showed that even exposing to 0.4 LC_{50} WSF of the Caspian Sea crude oil can lead to serious damages in liver tissue (fatty degeneration, karyorrhexis, karyolysis, and necrosis). So exposing to 0.4 LC_{50} can cause to health risk in beluga fingerlings and probability of the mortality will be increased with the increase of exposure duration.

Keywords: Water soluble fraction of crude oil (WSF), Huso huso, Histology, Liver tissue.