

Comparative effects of two water-accommodated fractions from light and heavy crude oils on early life stage of zebrafish *Danio rerio*

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Comparative effects of two water-accommodated fractions from light and heavy crude oils on early life stage of zebrafish *Danio rerio*.

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Aquatic environment is constantly threaten by introduction of anthropogenic pollutants. Among them, polycyclic aromatic hydrocarbons (PAHs) are widespread in these areas and can represent a threat to biological functions of the fishes. PAHs are in fact complex mixtures of large number of compounds with variable properties (incl. physical-chemical and toxicity). These properties depend on their origin, pyrolytic or petrogenic. They however share a low solubility in water making direct exposure in water impossible. The use of fish early life stage (ELS) to assess toxicity of chemicals or media is considered as *in vitro* assay and therefore allows reducing live animals tests in accordance with the European legislation. The main objective of this study is to evaluate the suitability of water-accommodated fractions (WAF) and zebrafish ELS to assess oils toxicity. For this purpose, zebrafish ELS were exposed to two WAFs, one prepared with from light (Arabian Light) and heavy (Erika) crude oils to determine at several concentrations. Toxicity assessment was performed using lethal and sublethal (e.g. DNA damage, deformations, hatching rate, heart rate, swimming activity) endpoints recorded at different developmental stages. Combination of physiological, morphological and behavioral readouts indicated that WAF prepared from heavy oil is several orders of magnitude more toxic than light oil and confirmed the suitability of this approach.

Keywords: water-accommodated fraction – crude oils – bioassay – zebrafish – early life stage – embryo toxicity – endpoints



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