SRS- 02

TOXICOLOGICAL EFFECTS OF NAPHTHALENE ON THE EARLY DEVELOPMENT OF ZEBRAFISH (*Danio rerio*).

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ABSTRACT

Polycyclic aromatic hydrocarbons and their derivatives constitute a large proportion present in diesel or crude oil and are identified as one of the major aquatic pollutants of which naphthalene (*Nap*) is one of the important chemicals. Therefore, the present study was carried out to identify the toxicological effects of *Nap* on the early developmental stages of a lower vertebrate model; zebrafish (*Danio rerio*). Healthy same-aged embryos (6 hours post fertilization –hpf) were obtained by induced spawning and utilized in this experiment. *Nap* was dissolved in 1% Dimethyl sulfoxide (DMSO) and the following concentrations were applied to respective groups (60, 40, 20, 10 and 5 mg/L). Egg water alone and DMSO with egg water were used as control. Percentage of mortality and developmental deformities were recorded at 24, 48, 72 and 96 hpf. All the treatments were done in triplicates. The results showed that LC_{50}value in embryos for *Nap* based on Probit analysis was 19.91 mg/L. Embryos showed developmental deformities such as pericardial edema, yolk sac edema, yolk sac fluid accumulation, yolk sac turbidity, spinal cord bent, haemorrhage and bent tail upon *Nap* treatment. The minimum concentration of *Nap* that showed developmental deformities was 20 mg/L. Percentage of mortality increased with the increasing concentration of *Nap*. The results revealed that, *Nap* showed developmental toxicity on zebrafish embryos and the toxicity is concentration-dependent. Further studies are being conducted to confirm the developmental toxicity of *Nap* based on histological analysis.

Keywords: Naphthalene, Zebrafish, Embryo-toxicity, Malformation, Deformities

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